Honeywell

VideoBloX

Matrix Switcher

User Manual

900.0809 - August 2006 – Rev 1.00

History

Issue	Date	Revisions
		Document VBMU001136
A	January 2005	Initial Release
B	March 2005	Added connecting a microphone to the audio input module (EC03325)
C	June 2005	Changed FCC Class from A to B and added UPS requirements; added voltage requirements for 2U chassis (EC03373)
D	August 2005	EC03430: Add warning for power supply requirement for HVB2U chassis; revised power requirements from 12VAC/VDC to 18VAC/VDC; added CE DoC for HVB2U (VideoBloX Lite)
E	February 2006	Add Appendix D; System Installation Diagrams; correct the procedure for restoring the default settings on the titled video output module.
		Document 900.0809
1.00	August 2006	Convert to Agile part number and Framemaker; Remove Appendix B and C for NETCPU; add pin connections for RJ45 connectors on chassis interlink modules; move Appendix D to Appendix B; add Appendix C for AHDR/HRHD DVRs, add Appendix D for connecting to a MAXPRO-Net Server; add Appendix E for networking chassis; add installation drawings for video input modules in multiple chassis; add installation drawing for connecting control signals on multiple chassis; add procedure for removing and inserting modules in the chassis.

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Compliances and Safeguards

FCC COMPLIANCE STATEMENT

INFORMATION TO THE USER: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CANADIAN COMPLIANCE STATEMENT

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

Caution Users of the product are responsible for checking and complying with all federal, state, ad local laws and statutes concerning the monitoring and recording of video and audio signals. Honeywell video systems shall not be held responsible for the use of this product in violation of current laws and statutes.

Caution Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

EUROPEAN COMPLIANCE STATEMENT

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Caution Users of the product are responsible for checking and complying with all federal, state and local laws and statutes concerning the monitoring and recording of video and audio signals. Honeywell Video Systems shall not be held responsible for the use of this product in violation of current laws and statutes.

IMPORTANT SAFEGUARDS

1. READ INSTRUCTIONS - All safety and operating instructions should be read before the unit is operated.
2. RETAIN INSTRUCTIONS - The safety and operating instructions should be retained for future reference.
3. HEED WARNINGS - All warnings on the unit and in the operating instructions should be adhered to.
4. FOLLOW INSTRUCTIONS - All operating and use instructions should be followed.
5. CLEANING - Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. ATTACHMENTS - Do not use attachments not recommended by the product manufacturer as they may result in the risk of fire, electric shock, or injury to persons.
7. WATER AND MOISTURE - Do not use this unit near water or in an unprotected outdoor installation, or any area which is classified as a wet location.
8. ACCESSORIES - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult and serious damage to the equipment. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer. Wall or shelf mounting should follow the manufacturer's instructions and should use a mounting kit approved by the manufacturer.

9. A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.
10. VENTILATION - Slots and openings in the cabinet and the back or bottom are provided for ventilation and to ensure reliable operation of the equipment and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. Equipment should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation, such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
11. POWER SOURCES - This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your product dealer or local power company. For products designed to operate from battery power or other sources, refer to the operating instructions.
12. GROUNDING OR POLARIZATION - The power supply supplied with this unit may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
13. OVERLOADING - Do not overload outlets and extension cords as this can result in a risk of fire or electric shock.
14. POWER-CORD PROTECTION - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the monitor.
15. OBJECT AND LIQUID ENTRY - Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.
16. SERVICING - Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
17. DAMAGE REQUIRING SERVICE - Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
    a. When the power-supply cord or plug is damaged.
    b. If liquid has been spilled, or objects have fallen into the unit.
    c. If the unit has been exposed to rain or water.
    d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
    e. If the unit has been dropped or the enclosure has been damaged.
    f. When the unit exhibits a distinct change in performance - this indicates a need for service.
18. REPLACEMENT PARTS - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

19. SAFETY CHECK - Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
20. LIGHTNING AND POWER LINE SURGES - For added protection of this unit during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power-line surges.
21. HEAT - The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
22. INSTALLATION - Do not install the unit in an extremely hot or humid location, or in a place subject to dust or mechanical vibration. The unit is not designed to be waterproof. Exposure to rain or water may damage the unit.
23. WALL OR CEILING MOUNTING - The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

EXPLANATION OF GRAPHICAL SYMBOLS

Caution Caution. The exclamation point within an equilateral triangle advises the user that failure to take or avoid a specified action could result in loss of data or damage to the equipment.

WARNING! **Warning: The exclamation point within an octagon advises users that failure to take or avoid a specified action could result in physical injury to a person or irreversible damage to the equipment.**

WARNINGS

WARNING! **To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.**

WARNING! **Do not insert any metallic object through the ventilation grills.**

WARNING! **This unit must be properly grounded to a good earth ground. Non-observance of this practice may result in a static electricity build-up that may result in an electric shock when external connections are touched.**

About This Document

This guide describes the installation of the VideoBloX matrix switching chassis and the modules installed in the chassis as well as connecting peripheral equipment to the CPU module such as keyboards for controlling the system. The DIP switch and jumper settings along with any internal adjustments or LED indicators are provided for each module.

Overview of Contents

This document contains the following chapters and appendixes:

- *Chapter 1, INTRODUCTION*, describes the product features and a system overview.
- *Chapter 2, REAR CHASSIS*, describes the connections and settings for the chassis rear panel and the power supply module. The front panel settings and indicators as also provided.
- *Chapter 3, CPU MODULE*, describes the function of the CPU Module, connector functions and pin-outs, user settings, and LED indicators.
- *Chapter 4, COMBO CPU MODULE*, describes the function of the combo CPU Module, connector functions and pin-outs, user settings, and LED indicators.
- *Chapter 5, VIDEO INPUT MODULES*, describes the various video input modules available, rear panel terminations, user settings, and LED indicators.
- *Chapter 6, VIDEO OUTPUT MODULES*, describes the video output modules available, rear panel terminations. User settings for the video output modules are described in *Chapter 7, TITLED VIDEO OUTPUT MODULE*.
- *Chapter 7, TITLED VIDEO OUTPUT MODULE*, describes the available titled video output modules, rear panel terminations, and user settings.
- *Chapter 8, AUDIO INPUT MODULE*, describes the available audio input modules, rear panel terminations, and user settings.
- *Chapter 9, AUDIO OUTPUT MODULE*, describes the available audio output modules, rear panel terminations, and user settings.
- *Chapter 10, CHASSIS INTERLINK INPUT AND OUTPUT MODULE*, describes the input and output interlink modules for connecting multiple chassis to increase the number of inputs of a matrix switching system. Rear panel terminations and user settings are provided.
- *Chapter 11, SECONDARY COMMUNICATIONS EXPANSION MODULE* describes the expansion module used when two CPUs are fitted into the same chassis. Rear panel terminations and user settings are provided.
- *Chapter 12, CPU ARBITRATION CONTROLLER MODULE*, describes the function of the arbitration module for system redundancy. Rear panel terminations and user settings are provided.
- *Appendix A, BINARY ADDRESS VALUES*, provides switch settings for binary addresses.
- *Appendix B, SYSTEM INSTALLATION DIAGRAMS*, provides installation drawings for connecting peripheral equipment to the VideoBloX system.
- *Appendix C, CONNECTING AHDR/HRHD DVRs*, provides a step-by-step guide to setting up the AHDR/HRHD Series DVRs and controlling them with a VideoBloX system controller.
- *Appendix D, CONNECTING TO MAXPRO-Net SERVER*, provides installation drawings for controlling the VideoBloX Matrix Switcher with a MAXPRO-Net Server.
- *Appendix E, NETWORKING TWO VIDEOBLOX MATRICES*, provides an example of the installation and programming of networking two chassis in different locations (site 1 and site 2).

Related Documents

The following documents provide information on topics related to this guide:

Document Title	Part Number
VideoBloX Auxiliary Control IP User Guide	900.0401
VideoBloX, PIT, Auxiliary Port User Guide	900.0403
VideoBloX, PIT, Javelin Application Note	900.0404
VideoBloX, PIT, Intercom User Guide	900.0405
VideoBloX, PIT, Lilin Dome Quick Start Guide	900.0406
VideoBloX, PIT, Sensormatic Ultra IV and AD DeltaDome Quick Start Guide	900.0407
VideoBloX, PIT, VCL Dome Quick Start Guide	900.0408
VideoBloX, PITIF User Guide	900.0409
VideoBloX Lite Switch Settings Application Note	900.0410
VideoBloX Matrix Switcher Configuration Guide	900.0411
VideoBloX GUI (Graphic User Interface) User Guide	900.0412
VideoBloX 422 F.T. Smart Combo User Guide	900.0566
VideoBloX HVBI2C16I/HVBI2C16O User Guide	900.0567
VideoBloX HVB16TPTX User Manual	900.0571
VideoBloX HVB422C4 Installation Manual	900.0590
VideoBloX HVBPIT44 User Manual	900.0595
VideoBloX Software License Registration	900.0690
VideoBloX HVBNETPIT Quick Reference Guide	900.0729
VideoBloX HVBMATPIT User Manual	900.0730
VideoBloX HVB232422 Application Note	900.0735

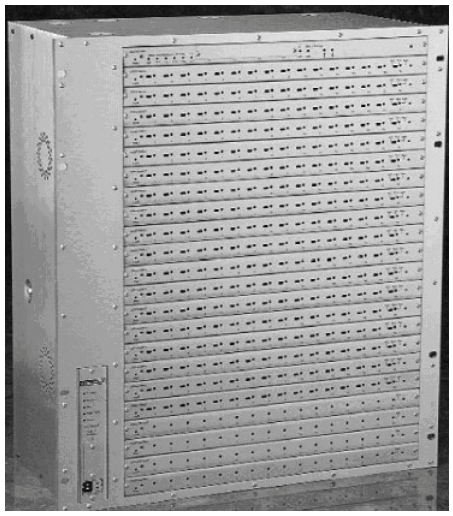
1

INTRODUCTION

PRODUCT DESCRIPTION

VideoBloX is a range of compatible building blocks for use in video surveillance and monitoring systems. An entire system consists of a suitable mix of the following components / modules:

Figure 1-1 VideoBloX Matrix Switcher Front View (HVB12U shown)



- Matrix chassis which are supplied complete with built in power supply units. These chassis are available in industry standard 19-inch 2U, 4U, 8U and 12U rack mount enclosures. The 2U chassis is powered by a low voltage power supply, while all other chassis may be powered from low voltage supply or main input power supply.
- VideoBloX CPU module. This card contains a high speed embedded microprocessor and the required support circuitry and is used for the control of the entire system.
- Video input modules. These provide protection and signal conditioning for 16 video inputs as well as matrix switching of these inputs. All video inputs to the system are via these modules.
- Video output modules. These provide protection and signal conditioning for up to 16 video outputs. The units are available in 8 channel and 16 channel versions, each of which may optionally include independent video titling on each output.

FEATURES

The entire system is based on a modular approach allowing for flexibility in configuring video control systems to suit a wide variety of applications.

- 4080 video inputs to 2048 video outputs
- 32 keyboards and or GUIs (Graphic User Interfaces)
- 32 on-board alarm inputs expandable to 256 using I2C modules.
- 4 on-board relay outputs expandable to 256 using I2C modules.
- 6 serial ports
- 32 programmable video groups and 512 video scenes - groups (consisting of scenes) are assigned to keyboards and users for ease of video management.
- 1024 (25-steps each) programmable sequences
- 64 programmable time-of-day events
- 256 x 24 character text message table

SYSTEM OVERVIEW

The configuration of a video surveillance / monitoring control system is highly dependent on the operational requirements of the system. The modular building block approach allows for different system configurations to be readily set up to suit differing application requirements.

Each system must contain at least one VideoBloX chassis. It is possible to interconnect more than one chassis either at the same location or at different locations with suitable data and video interlinks between the various racks. The form of interlink is dependent on the system type and could be hard wired, fiber optics, radio, microwave or other. If there are a large number of video sources at a location which is remote from the monitoring location, then it is generally more cost effective to distribute the matrix switching system by locating a subchassis at the remote site(s). This principle can be repeated for any number of remote sites.

Regardless of the number of subchassis required for a system, there will generally be one chassis, which is allocated as the system master. The master chassis must contain a CPU module. The only time a CPU module is not required in the master chassis is if the VideoBloX chassis are being controlled by a MAXPRO-Net Server.

Generally, all VideoBloX modules have their own on board local power supply units. All signal lines that run to the field are protected against limited over-voltages. Where any processing is required, this is done to the greatest possible extent in a distributed manner, with each module taking care of it's own housekeeping. Local supply voltages are monitored and the module will be reset if the supply falls below the minimum threshold. Watchdog timers monitor the operation of local CPU circuits and reset the circuits if a malfunction is detected. Each module has a DIP switch which is used to set the module address and indications which show the critical system operating parameters (power and communications). A broad range of diagnostics for each module is provided.

RACK MOUNT SYSTEM CHASSIS

VideoBloX is housed in an industry standard 19" rack mountable chassis. Various chassis heights are available to allow for different sized systems. The number of modules, which may be fitted, is shown in the following table:

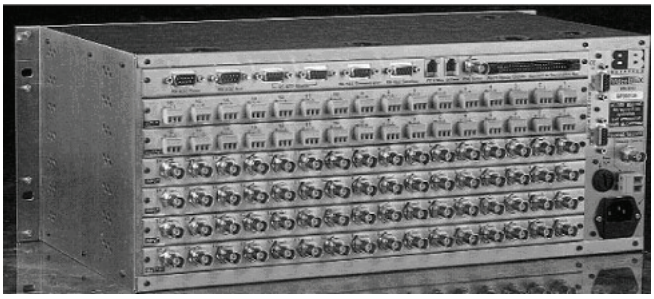
Table 1-1 VideoBloX Chassis

Model No.	Chassis Height	Max Modules	Typical size
HVB2U	2U	3	32 into 8
HVB4U	4U	7	80 into 16 or 64 into 32
HVB8U	8U	15	192 into 32 or 160 into 64
HVB12U	12U	23	320 into 32 or 288 into 64

VideoBloX modules are mounted from the front of the chassis. The modules are fitted horizontally to allow for vertical system expansion. All modules (except the power supply module) are position independent. Two thumb screws for removing modules from the chassis are provided with each chassis. Refer to *REMOVING A MODULE FROM A VIDEOBLOX CHASSIS*.

Modules are "hot-swappable" and may be removed and reinserted with the power on. The power supply module is fitted vertically beside the other modules. This module may not be removed with the power switched on and is not position independent.

Figure 1-2 VideoBloX Matrix Switcher Rear View (HVB4U shown)



A separate termination card is inserted at the rear of the chassis. Termination cards for BNC input/output, D type connectors, alarm connectors, etc. are available. Although modules are position independent, it is necessary to match the module with the termination card.

All commonly used adjustments are accessible from the front. Adjustments / switch settings which are made once at the time of installation, or when major reconfiguration is carried out, are accessed by removing a module. Refer to *REMOVING A MODULE FROM A VIDEOBLOX CHASSIS*.

The VideoBloX chassis incorporates the following components:

- Backplane: The backplane provides for distribution of power and control signals as well as 64 audio or video (or mixed) signals. The distance between modules is 1/2U.
- Cooling System: VideoBloX is equipped with fans, which provide forced cooling to ensure reliable operation for a fully populated chassis in ambient temperatures up to 104 degrees fahrenheit (40 degrees Celsius). Highly efficient, switch mode power supplies are used throughout, which minimizes the power dissipated internally.
- Termination card mounting slots: Located on the rear of the VideoBloX chassis allowing for different style termination cards to be fitted.
- Module mounting slots: Located on the front of the VideoBloX chassis allowing for insertion of the full range of VideoBloX modules, except the power supply unit.
- Power supply slot: Allowing for insertion of the power supply module accessible from the front of the VideoBloX chassis.

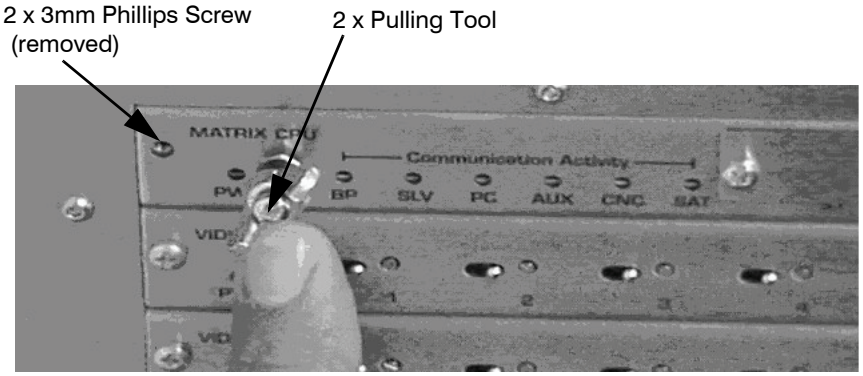
REMOVING A MODULE FROM A VIDEOBLOX CHASSIS

The modules are removed from the front of the VideoBloX chassis. Perform the following procedure to remove a module from the VideoBloX chassis.

WARNING! **If removing the power supply module, CPU module, or combo CPU module, remove power to the unit. All other cards are hot swappable.**

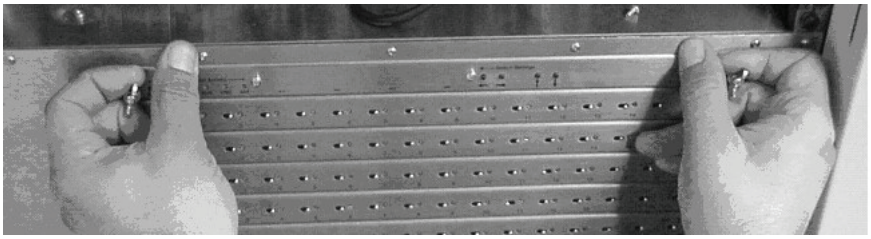
1. Remove the two 3mm Phillips screws on the ends of the module to be removed.
2. Thread the two pulling tools (supplied with the CPU module) into the inner threaded holes on the module to be removed.

Figure 1-3 Location of Phillips Screw and Pulling Tool



3. Pull the module using both hands with thumbs as leverage.

Figure 1-4 Removing a Module from the VideoBloX Chassis



INSTALLING A MODULE IN A VIDEOBLOX CHASSIS

Perform the following procedure to insert a module in a VideoBloX Chassis.

WARNING! If installing a CPU or combo CPU module, ensure the power is off. Once installed, connect power.

1. Align the module with both sets of rails located on the sides of the chassis. The card requires minimal force to seat the connectors.
2. Once seated, the card's power LED lights.
3. Insert and tighten the two 3mm Phillips screws on each end of the module.

2

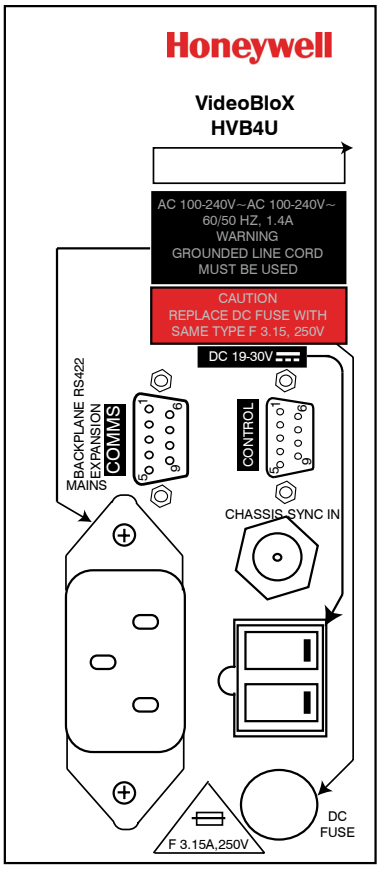
REAR CHASSIS

POWER SUPPLY MODULE

4U, 8U, 12U Chassis

Figure 2-1 Power Supply Module (HVB4U, HVB8U, HVB12U)

The power supply module for the 4U, 8U, and 12U chassis are the same as shown in the illustration to the right for the HVB4U. The power supply module converts the main input power to an unregulated low voltage DC supply. There are two versions of the power supply to provide 115 VAC or 240 VAC 50 / 60 Hz. It is additionally possible to power a VideoBloX chassis from a 18 to 24 VAC or 18 to 24 VDC supply. Power indications are visible from the front of the chassis. The power supply is equipped with the necessary protection and filtering to ensure regulatory compliance. It is possible to bring backup power into a chassis so that operation is not affected by the failure of the main input power supply. The power supply module provides an unregulated DC output to the backplane and each VideoBloX module is equipped with independent voltage / current regulation circuitry. The VideoBloX power supply has adequate capacity to power all modules within a chassis and also a limited number of external control keyboards. The distance between the chassis and the external control keyboard is also a limiting factor.

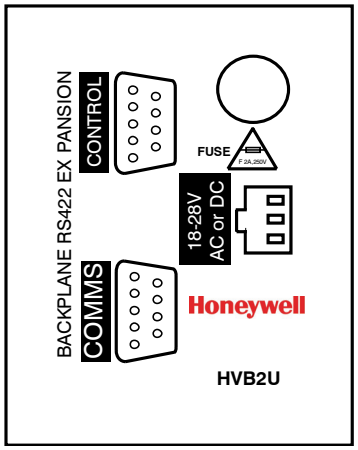


A system reset push button is accessible from the front panel after removal of a cover plate. The power supply module also incorporates communication drivers, used to interconnect multiple subracks for assembly of large matrices.

2U Chassis

Figure 2-2 Power Supply Module, HVB2U

The power supply module for the 2U chassis provides a 3-position terminal strip for connection to 18-28 VAC or VDC.



WARNING! **The HVB2U chassis must be powered by power supply, part number HPTV2402DWP, to be CE compliant.**

Note The 2U Chassis (HVB2U) should be powered by 24 VAC derived from a low capacitance-coupling transformer, such as a split bobbin transformer.

Main Input Power Connection

The main input power connection is made using a standard IEC power connector. This should be connected to the main input power supply, which may be 50 or 60 Hz. Please ensure that the mains voltage matches the voltage rating shown on the rear of the chassis. The earth connection must also be made. The mains input connector incorporates a fuse holder, which protects the main input power only. Note that the second fuse on the rear of the chassis is for the low voltage input only.

Ideally, the main input power supply should have low noise levels, minimum voltage fluctuation and be protected against power surges and lightning-induced over voltages.

WARNING! **The main input power supply must be used in conjunction with an uninterruptable power supply (UPS) rated greater than 400 VA and is CE certified for system reliability. The UPS is not provided by Honeywell and is the responsibility of the installer.**

Note that the chassis may alternatively be powered via the low voltage AC / DC connector (see paragraph, Low Voltage Input Connection). It is possible to connect both the main input power supply and the low voltage supply to ensure continuous system operation in the event of failure of one of the power sources.

Low Voltage Input Connection

This may be connected to a low voltage supply of 19-30 VDC. This power input is protected by means of the fuse, which is located adjacent to the power connector.

Note that the chassis may alternatively be powered via the main input power connector). It is possible to connect both the main input power supply and the low voltage supply, to ensure continuous system operation in the event of failure of one of the power sources.

Chassis Sync In

Optionally connect the master video synchronization source to this BNC connector. This allows for all video switching to take place during the vertical sync of the master video source.

Note Video switching may also be synchronized to the mains input or the sync signal on the "Control" connector.

Please refer to *DIP SWITCH SETTINGS* in this section for further information on configuration relating to the sync input.

CHASSIS EXPANSION DRIVER BOARD, HVBCE

This PCB plugs in to the power supply module. This board contains the drivers and receivers which are necessary to interconnect master / slave chassis together. This is required when one or more slave chassis are connected to a master chassis. For a system which uses only one chassis, this board is not required.

Installation Procedure:

1. Remove power from chassis.
2. Remove 2X fixing screws which secure the power supply module to the front panel.
3. Remove power supply module from chassis.
4. Line up dual row connector on power supply board with expansion driver board.
5. Carefully press board into place.
6. Fasten board in place with 2 X M3 mounting screws.
7. Insert power supply into chassis, carefully lining up with the chassis connector. Press all the way in.
8. Refasten using 2X fixing screws from Step 2.

Control Expansion Connector

This female DB9 connector allows for connection of RS422 control signals between multiple VideoBloX chassis. The pin-out of this connector is automatically modified depending on the configuration of the chassis being a master or slave. Refer to *DIP SWITCH SETTINGS* in this section for configuring the chassis as a master or slave. Generally, this connector may be wired pin to pin between one master and multiple slave chassis.

Communications Expansion Connector

This female DB9 connector allows for connection of RS422 serial communications signals between multiple VideoBloX chassis.

The pin-out of this connector is automatically modified depending on configuration for the chassis being a master or slave. Refer to *Control Expansion and Communication Connector Pin-Outs* for master and slave pin-outs. Generally, this connector may be wired pin-to-pin between one master and multiple slave chassis. Refer to *DIP SWITCH SETTINGS* for configuring the chassis as a master or slave.

Control Expansion and Communication Connector Pin-Outs

Throughout the VideoBloX range of products, a common pin-out scheme is used. The communication ports are referred to as Master or Slave, RS422 or RS232. The rear chassis Control and Comm connectors are RS422 connections. Refer to *DIP SWITCH SETTINGS* below for configuring the chassis as master or slave.

Table 2-1 Connector Pin-Outs, Female DB9

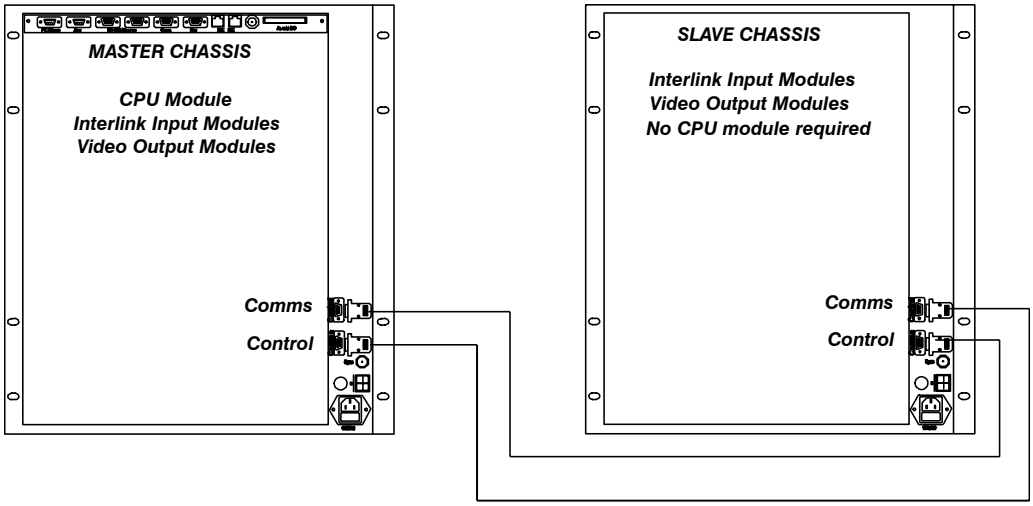
Master RS422	Slave RS422
Pin 1, TX -	Pin 1, RX-
Pin 2, TX+	Pin 2, RX+
Pin 3, RX+	Pin 3, TX+
Pin 4, RX -	Pin 4, TX-
Pin 5, Ground	Pin 5, Ground
Pin 6, 24 VDC	Pin 6, 24 VDC
Pin 9, Ground	Pin 9, Ground

CONNECTING MULTIPLE CHASSIS

Two Chassis

Using straight through cables with Female DB9 connectors on each end, connect the Control Connector to the Comms connector on both chassis.

Figure 2-3 Connecting Communication Signals between Two Chassis

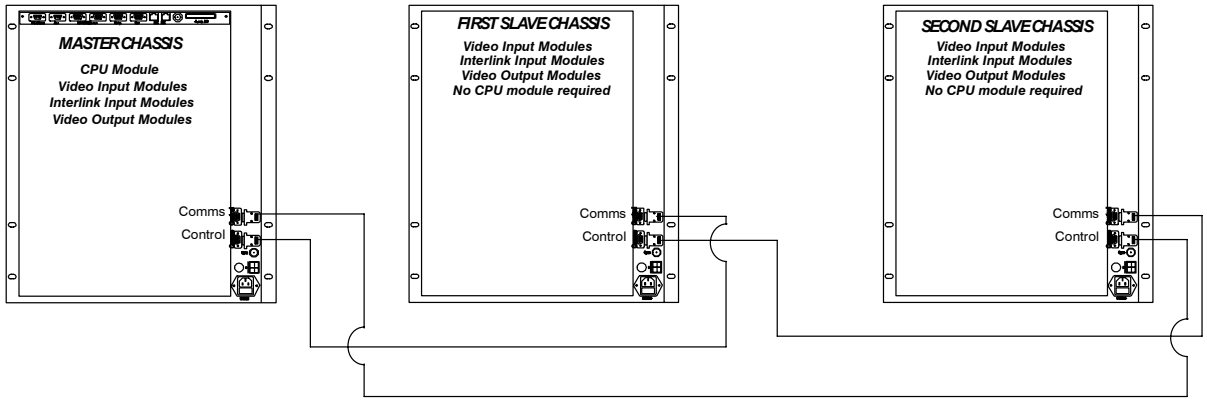


Three Chassis

Using straight through cables with Female DB9 connectors on each end

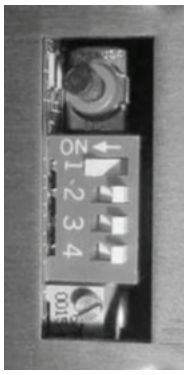
1. Connect the Control Connector on the first (master) chassis to the Comms connector on the second chassis (first slave chassis).
2. Connect the Control Connector on the second chassis (first slave chassis) to the Comms connector on the third chassis (second slave chassis).
3. Connect the Control Connector on the third chassis (second slave chassis) to the Comms connector on the first chassis (master chassis).

Figure 2-4 Connecting Communication Signals between Three Chassis



DIP SWITCH SETTINGS

Figure 2-5 Chassis DIP Switch Settings



Various parameters which are common to the entire chassis are configured by means of the 4-way DIP switch as per the following tables:

Table 2-2 DIP Switch Settings

Backplane Baud Rate	Switch 2	Switch 1
9600 Baud	Off	Off
19.2 KB (Default)	Off	On
57.6 KB	On	Off
115.2 KB	On	On

When multiple VideoBloX chassis are interconnected, use switch 4 to set the chassis, which contains the CPU card, to be the master. All other chassis must be set up as slaves.

Use switch 3 to determine which chassis generates / receives the system synchronization signal. This signal is used to synchronize video matrix switch operations to occur during the vertical synchronization period of the video signals.

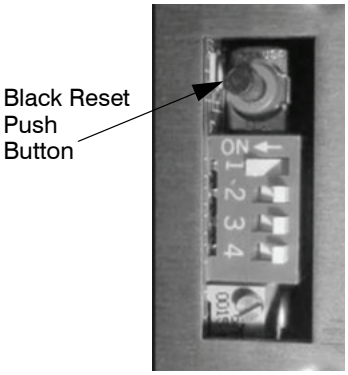
Table 2-3 Chassis Sync Signal

Switch Position	Off	On
3	Chassis generates system sync signal	Chassis receives system sync signal
4	Chassis is a master	Chassis is a slave

RESET PUSH BUTTON

Figure 2-6 System Reset Push Button

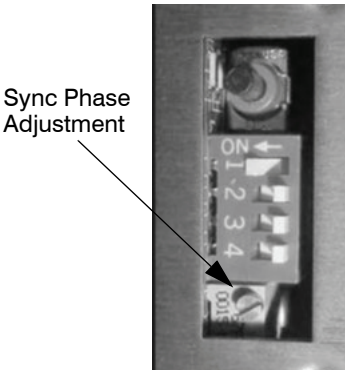
When this button is pressed, the chassis will be reset. Should the chassis be configured as a master, then all slave chassis will also receive a reset signal.



SYNC PHASE ADJUSTMENT

Figure 2-7 Sync Phase Adjustment

This adjustment determines the sync phase with respect to the mains waveform. When sync is received via the rear panel "Chassis Sync In" BNC or via the "Control" connector, this adjustment will have no effect.



LED INDICATIONS

The following table describes the function of each LED on the front panel of the power supply module.

Table 2-4 LED Indicators

LED Name	Description
Tx Data	Flashes on when there is data present on the backplane transmit data line
Rx Data	Flashes on when there is data present on the backplane receive data line
RTS	Flashes on when the chassis is transmitting data
Video Sync	On when sync input is present
Reset	On when the reset signal on the backplane is active

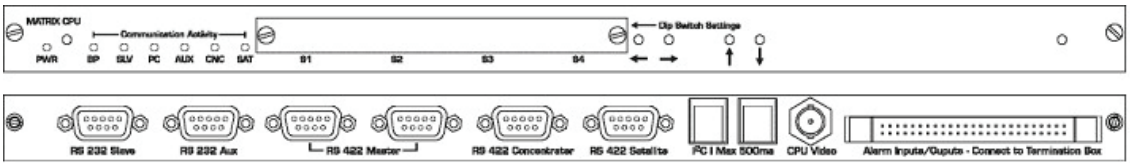
3

CPU MODULE

DESCRIPTION

A VideoBloX system is controlled from a single master CPU module. For an expanded system, with multiple chassis, it is possible to interconnect the chassis and have a single CPU module control the entire system. The settings described are for firmware revision 4.97.

Figure 3-1 Front and Rear Views of CPU Module



All system configuration is carried out by means of a PC running Windows 95 / 98 / 98SE / 2000 / XP or NT, which connects to the CPU module at the RS232 Slave connector. Once configuration is complete, the PC may optionally be detached or used as a system activity logger. All configuration information is stored in non-volatile memory and is retained during a power loss of up to one month.

The CPU module oversees the operation of all modules installed into a chassis or subchassis. The software/operating system is installed into this module. The following hardware subsystems are located within this module:

- High speed processor core
- EPROM memory to hold system firmware
- Non-volatile RAM memory to store system variables, configuration and downloaded system code extensions
- Watchdog timer and supply voltage monitor to automatically restart system operation in the event of supply brownouts or software malfunction
- Various decoding logic
- Power supplies for the CPU module only, including isolated supplies for the two communication channels which connect to external equipment
- Six serial communication channels
- 32 Alarm inputs
- 4 Alarm relay outputs
- DIP switches for COM channel settings

Front panel indications provide basic information relating to the systems overall health and communications activity.

It is possible to install multiple CPU modules into a single chassis. Should this be a requirement, then an additional CPU arbitration module must be installed. The arbitration module reroutes the major CPU communications channels to the configuration PC and the field devices. Should the arbitration module detect a CPU failure, the system can automatically switch over to the backup CPU.

Limited alarm inputs (32) and relay outputs (4) are provided on this module. Inputs and outputs may readily be expanded by the addition of the relevant I2C expansion modules or remote expansion via the RS422 serial communications link. Up to 256 alarm inputs and 256 alarm outputs are supported.

The CPU module has dual processors. Six communications ports provide the following functions:

Table 3-1 HVBCPU Module Ports

Port	Type	Description
Master (Female DB9)	RS422	Two (2) ports to connect to keyboards, PIT and PTZ using Honeywell Bossware* protocol
Slave (Male DB9)	Isolated RS232	Connects to PC for configuration, Operator's GUI and logging.
Aux (Male DB9)	Isolated RS232	Connects to 3rd party equipment such as access control to allow for matrix control
Concentrator (Female DB9)	RS422	Reserved
Satellite (Female DB9)	RS422	Connects to remote VideoBloX systems to allow "Networked" systems. A crossover RS422 cable is required when connecting two chassis.

*Bossware is the native protocol of the VideoBloX system.

DIP SWITCH SETTINGS

The CPU has four DIP switches which are used to set up various operational parameters. These switches are accessed by removal of the cover plate on the front of the CPU.

Figure 3-2 HVBCPU DIP Switches

DIP switch 1 is used to set communications parameters for the RS232 PC communication / configuration port.

Table 3-2 HVBCPU DIP Switch 1 Settings

Switch Reference	Function								
SW1/1	Least significant bit of unit address (A0)								
SW1/2	Address (A1)								
SW1/3	Address (A2)								
SW1/4	Address (A3)								
SW1/5	Address (A4)								
SW1/6	Most Significant bit of unit address (A5)								
SW1/7	PC / Config Baud Rate	Off	9600 Baud	On	19.2K Baud	Off	57.6K Baud	On	115.2K Baud
SW1/8		Off		Off		On		On	

Note that the address is set in binary. For more information, please refer to Appendix A.

DIP switch 2 is used to set communications parameters for the RS232 auxiliary communication port.

Table 3-3 HVBCPU DIP Switch 2 Settings

Switch Reference	Function								
SW2/1	Aux Port Baud Rate	Off	9600 Baud	On	19.2K Baud	Off	57.6K Baud	On	115.2K Baud
SW2/2		Off		Off		On		On	
SW2/3	Reserved								
SW2/4	Reserved								

Table 3-3 HVBCPU DIP Switch 2 Settings

Switch Reference	Function								
SW2/5	BossWare Baud Rate	Off	9600 Baud	On	19.2K Baud	Off	57.6K Baud	On	115.2K Baud
SW2/6		Off		Off		On		On	
SW2/7	Reserved								
SW2/8	Reserved								

DIP Switch 3 is used to set communications parameters for the RS422 satellite communication port and the RS422 concentrator port PC communication/configuration port.

Table 3-4 HVBCPU DIP Switch 3 Settings

Switch Reference	Function								
SW3/1	Satellite Baud Rate	Off	9600 Baud	On	19.2K Baud	Off	57.6K Baud	On	115.2K Baud
SW3/2		Off		Off		On		On	
SW3/3	Reserved								
SW3/4	Reserved								
SW3/5	Concen-tratrator Baud Rate	Off	9600 Baud	On	19.2K Baud	Off	57.6K Baud	On	115.2K Baud
SW3/6		Off		Off		On		On	
SW3/7	Reserved								
SW3/8	Reserved								

DIP switch 4 is used to set various parameters relating to the operation of the system as per the following table.

Table 3-5 HVBCPU DIP Switch 4 Settings

Switch Reference	Function								
SW4/1	Off=>Skip channel on video loss				On => include channel on video loss				
SW4/2	Off=>Title on Input (Camera 1 title is on all cameras.				On=> Title on Output (Individual camera title displayed)				
SW4/3	Video Loss Source	Off	Input Card	On	MVT Titler	Off	Con-cen-trator	On	Ignore
SW4/4		Off		Off		On		On	
SW4/5	On=>Read back PTZ position (PTZ DC2000 only)								
SW4/6	On=>Warn user if duplicate view is selected								
SW4/7	Reserved								
SW4/8	On=>Local matrix switch for Satellite configuration (i.e. only PTZ control is via satellite)								

PUSH BUTTONS

During normal operation, the front panel push buttons are used to select various diagnostic information display. The diagnostic menus are outputted on the CPU Video BNC connector

Figure 3-3 HVBCPU Push Buttons

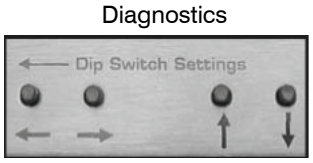


Table 3-6 HVBCPU Push Buttons

Push Button	Button Function
Left	Select previous diagnostic parameter
Right	Select next diagnostic parameter
Up	Select previous diagnostic screen
Down	Select next diagnostic screen

Restore Factory Defaults

While powering up the chassis, press the left and right push buttons simultaneously to restore factory defaults.

Caution All user configuration settings will be lost except titles.

LED INDICATORS

The front panel LEDs are used to display power and communication activity as follows

Figure 3-4 LED Indicators

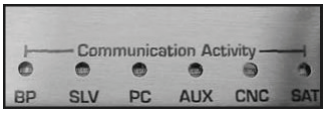


Table 3-7 HVBCPU LED Indicator Functions

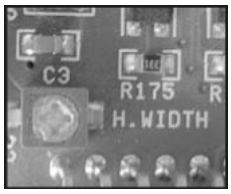
LED	LED Function
PWR	On => chassis has power
BP	Flashes for a change detected on the backplane, either a input card changing between on-line / off line mode, or video being lost / restored
SLV	Flashes for a change detected on the Bossware slave channel, either a PCK keypress or joystick movement
PC	Flashes for data received on the PC configuration port
AUX	Flashes for data received on the auxiliary port
CNC	Reserved
SAT	Flashes for data sent or received on the satellite port

ADJUSTMENTS

Display Width Adjustment (C3)

Figure 3-5 Display Width Adjustment

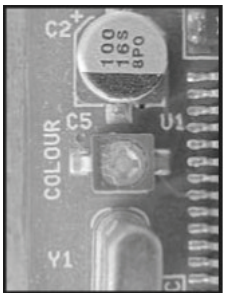
This adjustment is used to set the horizontal width of the diagnostic video display output.



Display Color Burst Frequency Adjustment (C5)

Figure 3-6 Display Color Burst Frequency Adjustment

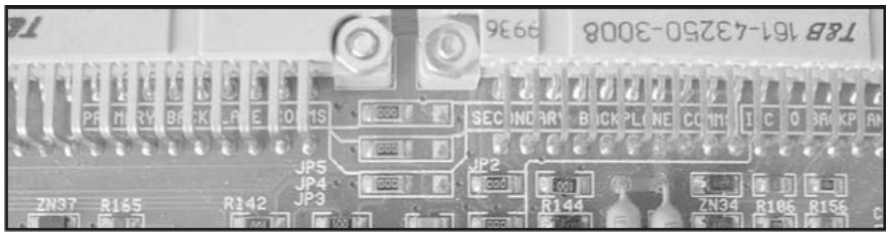
This adjustment is used to set the frequency of the color burst of the diagnostic video display output. It should be set so that when a color video monitor is connected, the diagnostic screen is shown in color. Adjustment is carried out by determining the positions where the color information is lost and then setting the trimmer to midway between these two positions.



Jumper Settings

JP 3,4 and 5 are used to select alternate communications channels on the backplane. Note that these will generally be set for the primary communications channel and will only be changed when specialized software is installed which uses the secondary communications channel.

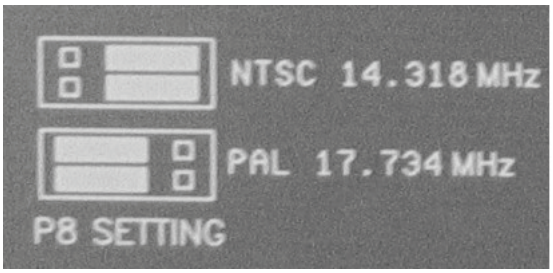
Figure 3-7 Jumper JP3, JP4, JP5 Settings



Jumper P8 is used to define the video format (NTSC or PAL) of the CPU module.

Figure 3-8 Jumper P8 Settings

Note that to change the video mode, it is necessary to change crystal Y1.



Toggle Switch SW1

Toggle switch SW1 is no longer populated on the HVBCPU board. If you have an older version of the CPU module with this switch populated and are using the an arbitration module in your system, refer to the following table for setting SW1. If there is only one CPU module and no arbitration module is installed in the chassis, SW1 should be set to disabled.

Figure 3-9 Toggle Switch SW1 for CPU Selection

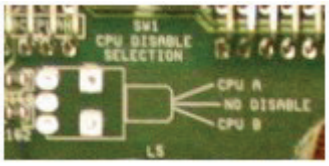


Table 3-8 Toggle Switch SW1

Switch Setting	Function
CPUA	CPU is assigned CPU 1 in the chassis.
Disabled	Only CPU in the chassis
CPUB	CPU is assigned CPU2 in the chassis.

FUSES

The CPU card has two (2) PCB mounted fuses, rated at 4A each. These fuses should only blow in the event of a fault on the board. In such an event, the CPU module should be returned to a Honeywell distributor for repair.

CONNECTIONS

Refer to Appendix B of this manual for sample system block diagrams.

RS422 Communication Ports (Master and Satellite)

All RS422 communications ports use the following pin-outs:

Table 3-9 HVBCPU RS422 Communication Port Pin-Outs

Pin	Master Mode	Slave Mode
1	RS422 TX[-]	RS422 RX[-]
2	RS422 TX[+]	RS422 RX[+]
3	RS422 RX[+]	RS422 TX[+]
4	RS422 RX[-]	RS422 TX[-]
5	RS422 common	RS422 common
6	Auxiliary power common	Auxiliary power common
7	Transmit Indicator TX[+]	Transmit Indicator RX[+]
8	Transmit Indicator TX[-]	Transmit Indicator RX[-]
9	Auxiliary power +ve	Auxiliary power +ve

RS232 Communication Ports (Slave and AUX)

All RS232 communications ports use the following pin-outs:

Table 3-10 HVBCPU RS232 Communication Port Pin-Outs

Pin	Pin Function
1	N/C
2	TXD
3	RXD
4	N/C
5	RS232 common
6	N/C

Table 3-10 HVBCPU RS232 Communication Port Pin-Outs

Pin	Pin Function
7	CTS
8	RTS
9	N/C

I2C Connectors

The I2C connectors have the following pin-outs:

Table 3-11 I2C Connector Pin-Outs

Pin	Function
1	Common
2	I2C clock (SCL)
3	I2C data (SDA)
*4	+ 5 VDC

Refer to *Appendix B, SYSTEM INSTALLATION DIAGRAMS*, of this manual for illustrations (drawing numbers D002411 and D002412) of the I2C Input/Output modules. Refer to the I2C16I/I2C16O User Manual for detailed information on the I2C modules.

Connect the I2C module to the rear of the CPU with flat telephone type cable and RJ11 plugs. The connection cable is provided by the installer. The cable is made 1 to 1. That is, if looking at the copper side of one end and yellow is on the left, then the other side must be made with yellow on the left.

The cable should not exceed 15 feet (4.5 meters) and no more than five (5) I2C devices on one loop. Input and output devices may exist on the same I2C line.

Note Note: if using the I2C modules in conjunction with the alarm termination panel, the alarm inputs on the alarm termination panel represent alarms 1 to 32. Set the beginning address of the I2C alarm input module to address 2 (represent alarms 33 to 48) and so forth for additional I2C modules.

CPU Video

Using 75 ohm coaxial cable, connect to a monitor (input) to view diagnostic screens.

Alarm Inputs/Outputs

1. Connect the ribbon cable provided between the Alarm Inputs/Outputs Connector on the CPU Module and the Connector (Connect to CPU Alarm Inputs/Outputs Connector) on the Alarm Terminal Block.
2. Connect the Alarm Inputs to the terminal block.
3. Connect the Alarm Outputs to the terminal block.

Refer to Appendix B, Alarm Terminal Panel, Drawing number D002414 for an illustration of connecting alarm inputs/outputs to the termination panel.

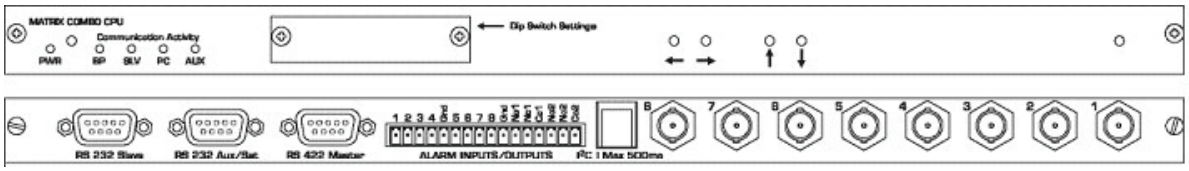
4

COMBO CPU MODULE

DESCRIPTION

The Combo CPU is a reduced cost, scaled down version of the CPU module and additionally includes an 8 channel titled output section.

Figure 4-1 Front and Rear View of Combo CPU Module



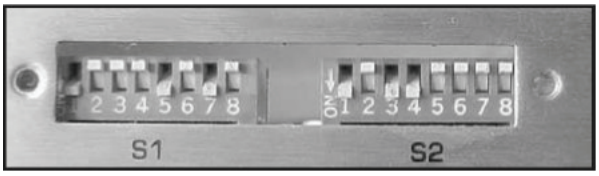
The Combo CPU has the following limitations:

- A single communications port is shared between the Auxiliary and Satellite ports. Only one of these functions will therefore be possible.
- A maximum size of 96 inputs by 8 outputs is supported. The AVB16M8 input cards are used for the video inputs.
- Only 8 alarm inputs and 2 relay outputs are available. Alarm inputs may be expanded with local I2C modules, but the Combo CPU does not support expanded alarms brought into the system via a PIT alarm concentrator.
- The "Concentrator" communications port is not available.
- A maximum of 8 keyboards.

DIP SWITCH SETTINGS

Figure 4-2 Combo CPU DIP Switch Settings

The Combo CPU has two DIP switches which are used to set up various operational parameters. These switches are accessed by removal of the cover plate on the front of the Combo CPU.



DIP switch 1 is used to set communications parameters for the RS232 PC communication / configuration port.

Table 4-1 Combo CPU DIP Switch SW1 Settings

Switch Reference	Function								
SW1/1	Least significant bit of unit address (A0)								
SW1/2	Address (A1)								
SW1/3	Address (A2)								
SW1/4	Address (A3)								
SW1/5	PC / Config Baud Rate	Off	9600 Baud	On	19.2K Baud	Off	57.6K Baud	On	115.2K Baud
SW1/6		Off		Off		On		On	
SW1/7	Aux/Sat Port Baud Rate	Off	9600 Baud	On	19.2K Baud	Off	57.6K Baud	On	115.2K Baud
SW1/8		Off		Off		On		On	

Note that the address is set in binary. For more information, please refer to Appendix A.

DIP switch 2 is used to set communications parameters for the RS232 auxiliary communication port.

Table 4-2 Combo CPU DIP Switch SW2 Settings

Switch Reference	Function								
SW2/1	BossWare	Off	9600 Baud	On	19.2K Baud	Off	57.6K Baud	On	115.2K Baud
SW2/2		Off		Off		On		On	
SW2/3	Off=Skip channel on video loss				On = Include channel on video loss				
SW2/4	Off=Select Auxiliary Port				On = Select Satellite Port				
SW2/5	Reserved								

Table 4-2 Combo CPU DIP Switch SW2 Settings

Switch Reference	Function
SW2/6	Reserved
SW2/7	Reserved
SW2/8	Reserved

PUSH BUTTONS

Operation of the Combo CPU front panel pushbuttons is similar to that of the CPU, described in Section 3, Push Buttons. Diagnostic output is shared with Monitor Output 1. A time-out disables the diagnostic feature and returns monitor one to normal operation.

LED INDICATIONS

The front panel LEDs are used to display power and communication activity as follows

Figure 4-3 LED Indicators

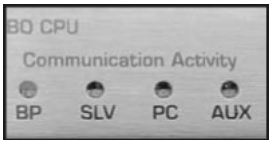


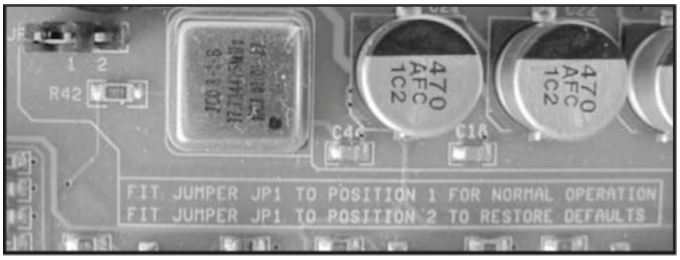
Table 4-3 Combo CPU LED Indicator Functions

LED	LED Function
PWR	On => chassis has power
BP	Flashes for a change detected on the backplane, either a input card changing between on-line / off line mode, or video being lost / restored
SLV	Flashes for a change detected on the Bossware slave channel, either a PCK keypress or joystick movement
PC	Flashes for data received on the PC configuration port
AUX	Flashes for data received on the auxiliary / satellite port

RESTORING FACTORY DEFAULTS

With the Combo CPU out of the rack and disconnected from power,

Figure 4-4 Combo CPU, Restoring Factory Defaults



1. Move jumper JP1 to position 2.
2. Leave JP1 in this position for 10 seconds. This clears the non-volatile memory of the Combo CPU.
3. Return jumper JP1 to position 1.
4. Reinstall the Combo CPU in the rack. When power is applied, the default settings will automatically be loaded.

5

VIDEO INPUT MODULES

DESCRIPTION

The video input module brings 16 video signals into the VideoBloX chassis. Each of the inputs may be routed to 1 or more of the 64 backplane channels. All input modules have 16 video inputs, but can be switched to 16, 32, or 64 (maximum) outputs. Older modules have front panel termination switches and some have internal termination jumpers.

VideoBloX input modules are equipped with:

- Their own CPU, switching voltage regulator and fuse.
- Older styles have front panel mounted termination switch
- Newer styles have an internal termination switch located on the front edge of the PCB
- Front panel accessible gain adjustment (0 to 6db) for each input. This is useful to restore picture levels for long video runs. Typically a poor signal results in jumping or tearing text. Adjust this potentiometer can eliminate the jumping text. This adjustment can also be useful when the outputs feed a DVR as DVRs are more susceptible to low video levels.
- Internal jumper selectable high frequency compensation to restore lost high frequency signals on long video runs.
- Video Loss detection. Allows triggering of a sequence based on video loss and / or video restored.
- Limited protection against over-voltages, such as those induced by a nearby lightning strike.
- The front panel LED illuminates for power and flicker off briefly when a valid command is sent with the card's address.

.

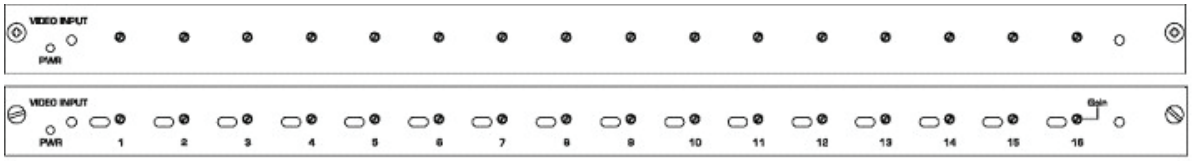
Table 5-1 Video Input Modules (Single Chassis)

Video Input Module	Description
HVB16M16	16 Inputs switch to 16 Outputs
HVB16M32	16 Inputs switch to 32 Outputs
HVB16M64	16 Inputs switch to 64 Outputs

The boards are identified by the quantity of analog switching array ICs, MT8816AP (8x16 switch array). The HVB16M16 has 2 ICs, the HVB16M32 has 4 ICs, and the HVB16M64 has 8 ICs.

Caution The video input module must match the number of video outputs required. That is, a system with an HVB16M16 (16 video outputs) cannot later be increased to a 32-output matrix unless the video input card is replaced with an HVB16M32 (32 video outputs) module.

Figure 5-1 Video Input Modules (2 front panel options)



There are a number of rear panel termination options:

Figure 5-2 Video Input Module (Standard - 16 BNC Inputs

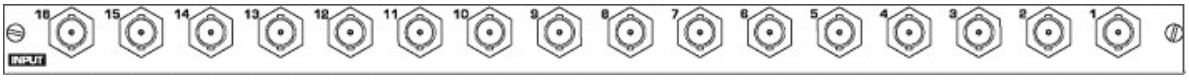
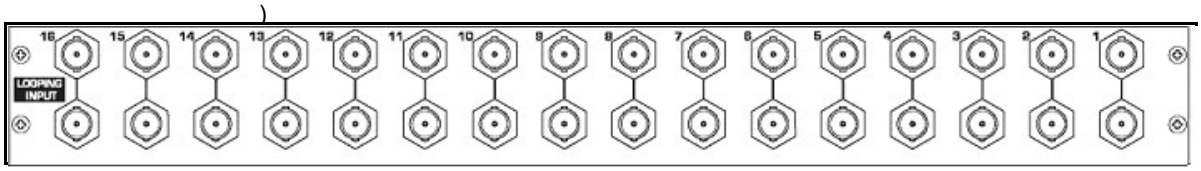


Figure 5-3 Video Input Module (Looping BNC Inputs)



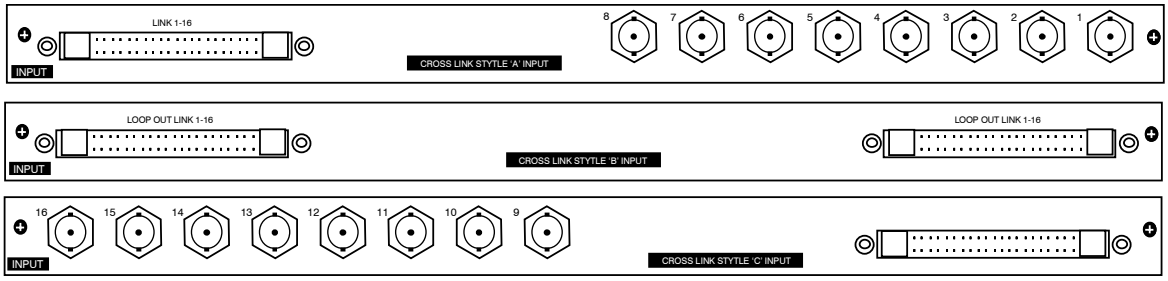
The looping card allows for looping of video inputs to another matrix switcher chassis or to an external video device, such as a VCR, DVR or multiplexer. Note that if a looping termination card is installed, a blank cover plate will be needed above the input card on the front of the chassis.

Different rear terminations can be used with each input card to alter the connection method to the chassis or card. The standard video input is connected by means of a BNC connector mounted on the rear termination panel.

CROSS LINK VIDEO INPUT MODULES

When a system requires more than 64 video outputs (the maximum allowed in a single rack), cross-looping input rear termination modules may be used. These modules allow for a cross-connection of 8 video inputs from each of the style 'A' and 'C' modules. When connected using coaxial ribbon cables, each chassis receives all 16 video inputs. The 'B' style cross-connection module allows for interconnection of up to 4 VideoBloX chassis.

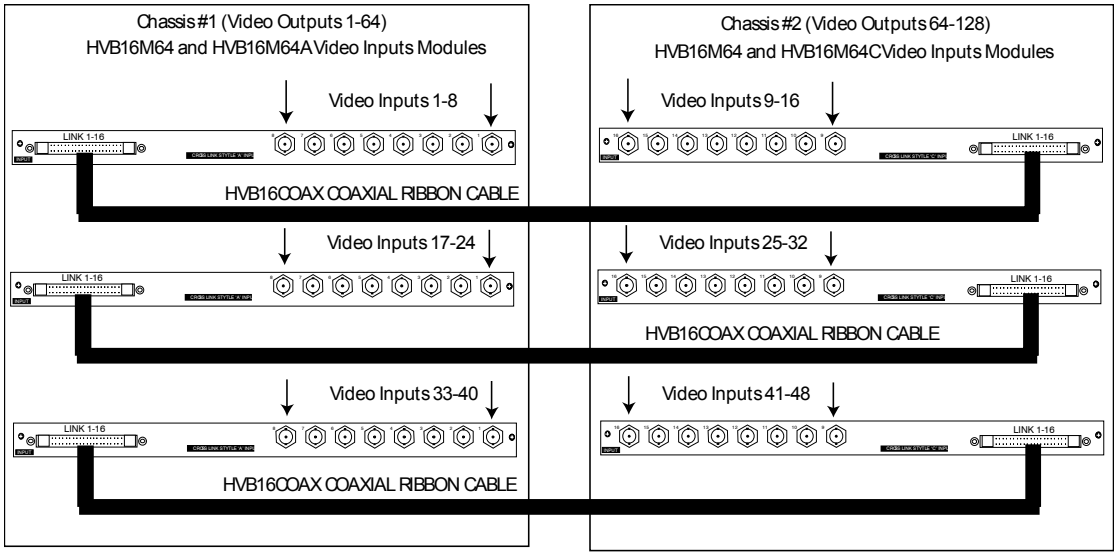
Figure 5-4 Type A, B and C Cross-Link Looping Input Termination Modules



The following drawings show examples of how the Cross-Link Video Input Modules are installed when more than 64 video outputs are required.

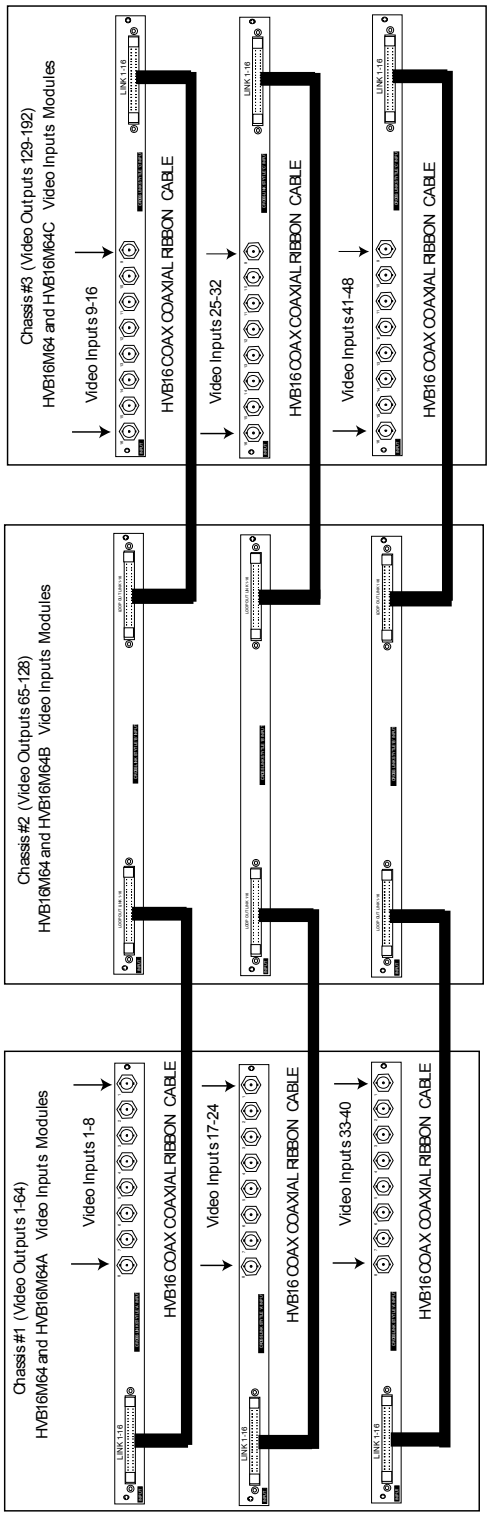
VideoBloX Switching System with 128 Video Outputs (2 chassis)

Figure 5-5 VideoBloX Matrix Switcher with 128 Video Outputs (2 Chassis)



VideoBloX Switching System with 192 Video Outputs (3 Chassis)

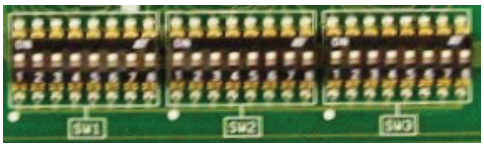
Figure 5-6 VideoBloX Matrix Switcher with 192 Video Outputs (3 Chassis)



DIP SWITCH SETTINGS

Dependant on the style of input module, DIP switches will be as per one of the following diagrams. Note that the address is set in binary. For more information, please refer to Appendix A.

Figure 5-7 DIP Switches SW1 - SW3



HVB16M16

Tables 5-2 and 5-3 show the DIP switch (SW1 and SW2) settings for the HVB16M16.

Table 5-2 HVB16M16 DIP Switch SW1 Settings

Switch	Function	
SW1.1	A0	Input Address
SW1.2	A1	
SW1.3	A2	
SW1.4	A3	
SW1.5	A4	
SW1.6	A5	
SW1.7	A6	
SW1.8	A7	

Table 5-3 HVB16M16 DIP Switch SW2 Settings

Switch	Function	
SW2.1	A0	Input Group Address
SW2.2	A1	
SW2.3	A0	Output Group Address
SW2.4	A1	
SW2.5	On	Switch 1 to 1

Table 5-3 HVB16M16 DIP Switch SW2 Settings

Switch	Function	
SW2.6	On	Mute Reply
SW2.7	On	Protocol B
SW2.8	On	CH1 to Sync

- DIP Switch S1 (1-8) defines the card address in binary format and is set to represent the camera range. For example, cameras 1-16, set to 1, cameras 17-32, set to 2, etc.
- S2 (1-2) extends the input address range.
- S2 (3-4) sets the output range in binary format in groups of 64.
- S2 (5) - turn on to cause the module to automatically switch its 16 video inputs to 16 video outputs on power up. In this mode, the address switch determines which group of outputs will be used. This allows for using the modules to make large VDAs, without the need for a CPU.
- S2 (6) - turn on to cause the module to work transparently as a slave to another input module. In this mode, the module does not reply to CPU messages. In this mode, it is possible to have 3 similar matrix switchers, switching RGB video.
- S2 (7) - not used. Reserved for future use.
- S2 (8) - allows channel 1 to be used for synchronization (e.g. 2U chassis with DC power).

HVB16M32 and HVB16M64

Tables 5-4, 5-5. and 5-6 show the DIP switch settings (SW1, SW2, and SW3) for the HVB16M32 and HVB16M64 modules.

Table 5-4 HVB16M32 and HVB16M64 DIP Switch SW1 Settings

Switch	Function	
SW1.1	A0	Input Address
SW1.2	A1	
SW1.3	A2	
SW1.4	A3	
SW1.5	A4	
SW1.6	A5	
SW1.7	A6	
SW1.8	A7	

Table 5-5 HVB16M32 and HVB16M64 DIP Switch SW2 Settings

Switch	Function	
SW2.1	A8	Input Address
SW2.2	A9	
SW2.3	A10	
SW2.4	B0	Output Address
SW2.5	B1	
SW2.6	B2	
SW2.7	B3	
SW2.8	B4	

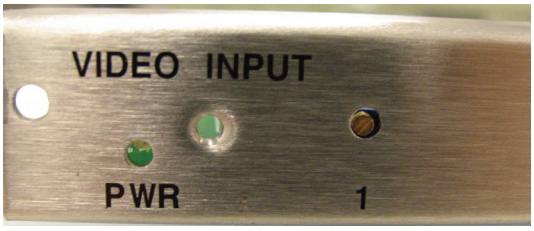
Table 5-6 HVB16M32 and HVB16M64 DIP Switch SW3 Settings

Switch	Function	
SW3.1	P0	Protocol
SW3.2	P1	
SW3.3	ON = FUNCTION A	
SW3.4	ON = FUNCTION B	
SW3.5	ON = FUNCTION B	
SW3.6	ON = Switch 1 to 1	
SW3.7	ON = Test Mode	
SW3.8	No Function	

- DIP Switches S1 (1-8) and S2 (1-3) define the card's address in a binary format and is set to represent the camera range. For cameras 1-16 set the address to 1, cameras 17-32 set to 2, etc.
- DIP Switch S2 (4-8) sets the monitor group in binary format. Example: all off = card is in a chassis for monitors 1-64. S2, 4 on = card is in a chassis for monitors 65-128.
- DIP Switch S3 (1-2) not used, set to off.
- DIP Switch S3 (3-5) Only switch 3 has been implemented. When switch 3 is on will mute reply's back to the CPU. Used for systems that have 2 or more input cards with the same address (e.g. systems with more than 64 outputs)
- S3 (6) is used for testing to switch 16 cameras to the outputs. If the address is 1, cameras 1-16 will be switched to monitors 1-16. If the address is 2, cameras 1-16 will be switched to monitors 17-32, etc.
- S3 (7) is a test mode that will randomly switch cameras to monitors. Used by manufacturing.
- S3 (8) is not used.

LED INDICATIONS

The LED on the front panel of the input card illuminates to show power. Each time that a serial message is received via the backplane and is addressed to the module, the LED will flash off briefly.

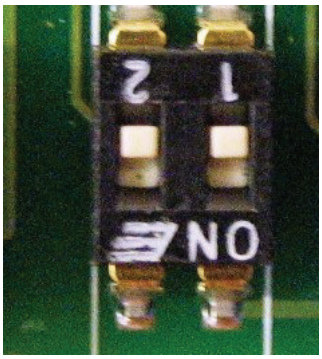


ADJUSTMENTS

Video Input Gain Setting

Each input has an adjustable gain, which is used to adjust for differing levels of the video input signal. SW2 must be set to ON to adjust the gain

Figure 5-8 Video Input Gain Enable/Disable (SW2) and Termination (SW1).



This level should be set such that the input signal is amplified to provide 2 volts (0.6V sync and 1.4V peak white) on the backplane, when the backplane is terminated into an output card. Should the output card be calibrated, then the input may be set to provide a 1 volt (0.3V sync and 0.7V peak white) when terminated into a 75 ohm load.

Figure 5-9 Video Gain Adjustment

Termination

The termination switch SW1 should be set to On (75 ohm) position unless the input is looped to other video products. Should the input be looped to another device, then ensure that the signal is terminated only at one position. The termination should always be set to on at the last video device. Refer to *Figure 5-8* for an illustration of termination switch SW1.

FUSES

The input module has one PCB mounted fuse, rated at 4A. This fuse should only blow in the event of a fault on the board. In such an event the input module should be returned to Honeywell for repair.

6

VIDEO OUTPUT MODULES

DESCRIPTION

The video output module provides 16 video signals from the VideoBloX chassis. Each of the outputs is associated with one of the 64 backplane channels.

Table 6-1 Video Output Modules

Model	Description
HVB8O	8 Outputs
HVB16O	16 Outputs

Figure 6-1 8 and 16 Channel Video Output Modules - Front View

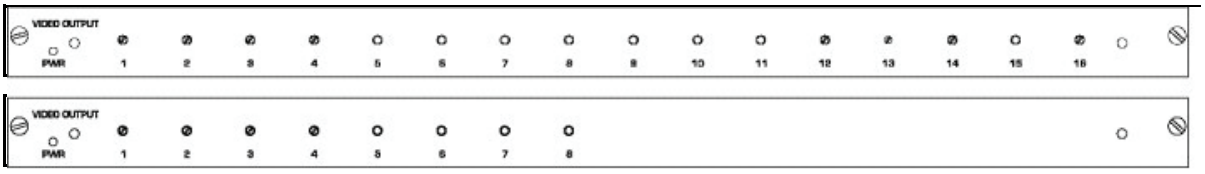
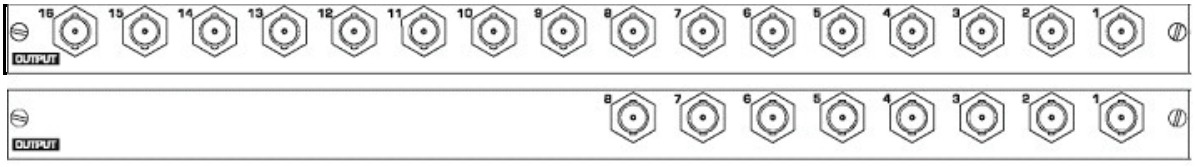


Figure 6-2 8 and 16 Channel Video Output Rear Panel Termination Modules



Modules are equipped with:

- Front panel accessible gain adjustment
- Limited protection against over-voltages, such as those induced by power surges and nearby lightning strikes. The output module has a range of jumpers which are populated to determine which group of 16 video outputs the module receives from the backplane.

Caution The user should not modify the jumpers. Output cards should be ordered for specific output channels.

DIP SWITCH SETTINGS

Refer to *Chapter 7, TITLED VIDEO OUTPUT MODULE*, *DIP SWITCH SETTINGS*.

VIDEO OUTPUT GAIN ADJUSTMENT

Refer to *Chapter 7, TITLED VIDEO OUTPUT MODULE*, *VIDEO OUTPUT GAIN ADJUSTMENT*.

OUTPUT RANGES

The output cards use a daughter board to set the output range (i.e. monitor 1-16 or 17-32, etc.). Refer to the appropriate paragraph in *Chapter 7, TITLED VIDEO OUTPUT MODULE*, *DAUGHTER BOARD SETUP*, *MODULE BOARD SETTING, VIDEO OUTPUTS 1-64*, *MODULE BOARD SETTING, VIDEO OUTPUTS 1-16*, *MODULE BOARD SETTING, VIDEO OUTPUTS 17-32*, *MODULE BOARD SETTING, VIDEO OUTPUTS 33-48*, or *MODULE BOARD SETTING, VIDEO OUTPUTS 49-64*, for the desired output range and positioning of the daughter board.

7

TITLED VIDEO OUTPUT MODULE

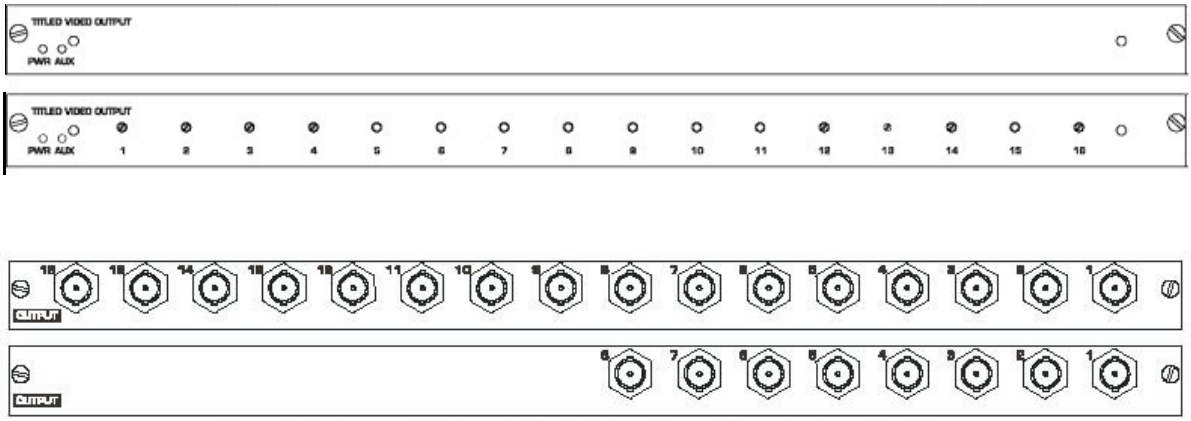
DESCRIPTION

The titled video output module provides 16 titled video signals from the VideoBloX chassis. Each of the outputs is associated with one of the 64 backplane channels

Table 7-1 Titled Video Output Modules

Model	Description
HVB8TO	8 Titled Video Outputs
HVB16TO	16 Titled Video Outputs

Figure 7-1 .Front and Rear Views of Titled Video Output Module



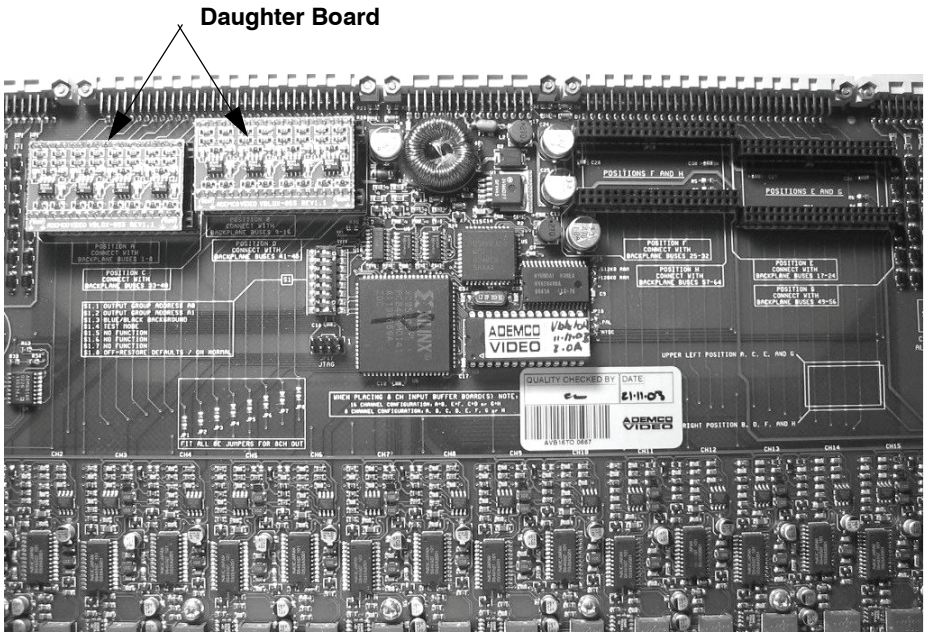
Titled Video Output Modules are equipped with:

- 24 character by 12 line text generation capability.
- Built in real time clock.
- Non-volatile RAM with Lithium battery to back up memory for storing camera titles during power down. The camera titles are stored on the output card; not on the CPU.
- Limited protection against over-voltages, such as those induced by a nearby lightning strike.

DIP SWITCH SETTINGS

The video output cards use a daughter board to set the output range (i.e. monitor 1-16 or 17-32, etc.).

Figure 7-2 Location of Video Output Daughter Board



Refer to the appropriate paragraph below, *MODULE BOARD SETTING, VIDEO OUTPUTS 1-16*, *MODULE BOARD SETTING, VIDEO OUTPUTS 17-32*, *MODULE BOARD SETTING, VIDEO OUTPUTS 33-48*, or *MODULE BOARD SETTING, VIDEO OUTPUTS 49-64* for the required video outputs for positioning of the daughter board.

Set the Titled Output Module DIP switches as follows:

Table 7-2 DIP Switch S1 Settings

DIP Switch S1	Function
S1.1	Output Group Address A0
S1.2	Output Group Address A1
S1.3	Blue/Black Background
S1.4	Test Mode
S1.5	No Function
S1.6	No Function
S1.7	No Function
S1.8	Off=Restore Defaults On=Normal

- S1 (1-2) set the Monitor Group for that output card (e.g. if the card is located in the Monitor group (chassis) of outputs 1-64 then set S1-1 Off and S1-2 Off. If the Monitor Group is 65-128 then set S1-1 On and S1-2 Off and so on in binary count.
- S1 (3) sets the no video screen to blue or black.
- S1 (4) places the card in test mode and displays diagnostic info on the output.
- S1 (5-7) are not used.
- S1 (8) Restores the defaults (clears all titles).

VIDEO OUTPUT GAIN ADJUSTMENT

The default for the output level adjustment is to provide an overall normalized system gain. To set the system for normalized gain, first adjust the input gain as described in *Chapter 5, VIDEO INPUT MODULES*, *Video Input Gain Setting*. Then with the output terminated into 75 ohms, adjust the rear panel gain so that the output signal level is the same as the input signal level. Normally either of the methods described could be used. Should it be required to generate a non-standard video signal level, such as boosting the signal to compensate for long cable runs, adjust the gain in order to achieve the desired output signal once the input gain has been adjusted as described.

RESTORING FACTORY DEFAULTS

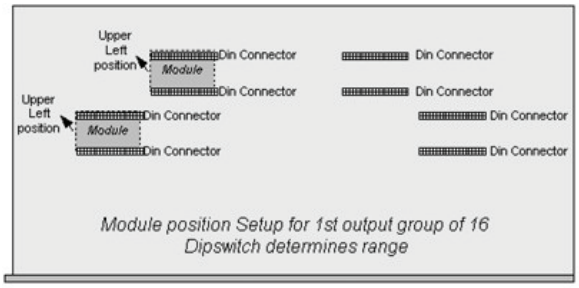
With the output module out of the chassis and disconnected from power,

1. Place DIP switch S1-8 in the Off position.
2. Leave it in the Off position for 10 seconds. This clears the non-volatile memory of the Titled Output module.
3. Return the switch to the ON position.
4. Reinstall the module in chassis. When power is applied to the module, the module defaults to a diagnostic mode and initializes defaults.
5. Perform one of the following to clear the diagnostics:
   - Once again, remove the module from the chassis and reinstall it,
   - Remove power to the chassis and then power it back up while the module is seated or,
   - Press the black reset button on the power module cover while the module is seated

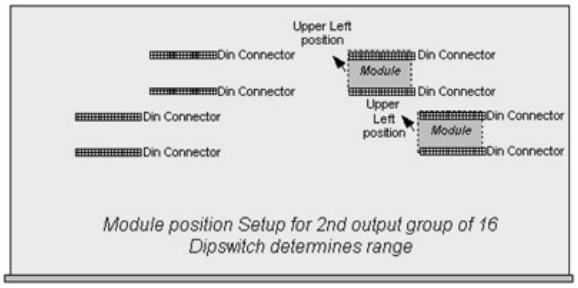
   When power is reapplied to the module, the diagnostic mode is cleared.

DAUGHTER BOARD SETUP

MODULE BOARD SETTING, VIDEO OUTPUTS 1-64



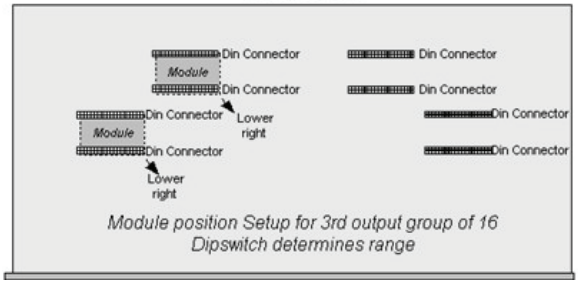
Outputs 1-16



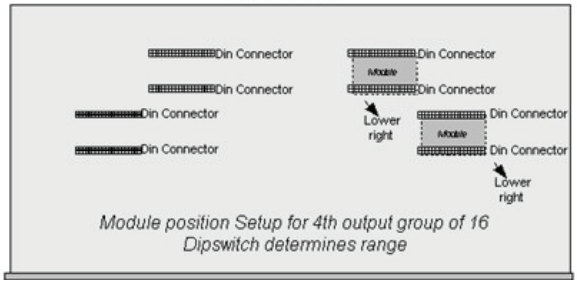
Outputs 17-32

Typical for Module positions for outputs 1-64

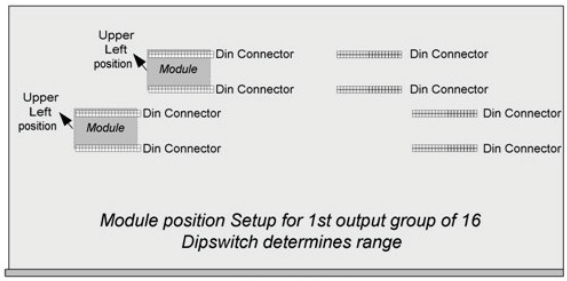
Outputs 33-48



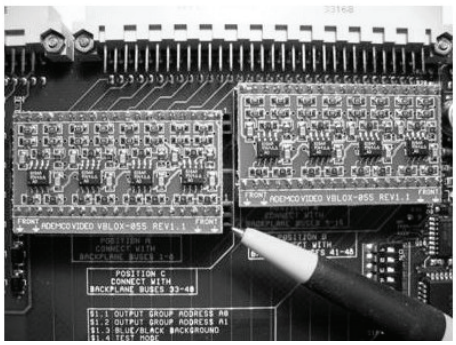
Outputs 49-64

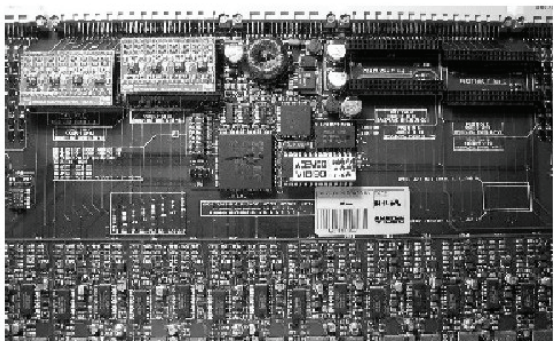


MODULE BOARD SETTING, VIDEO OUTPUTS 1-16

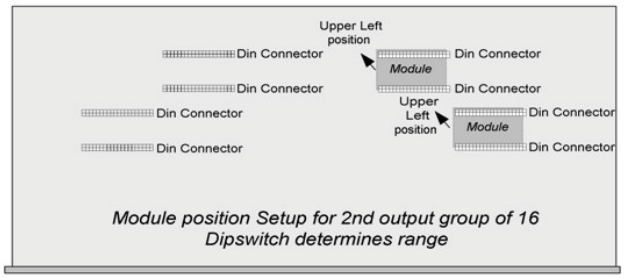


Outputs 1-16

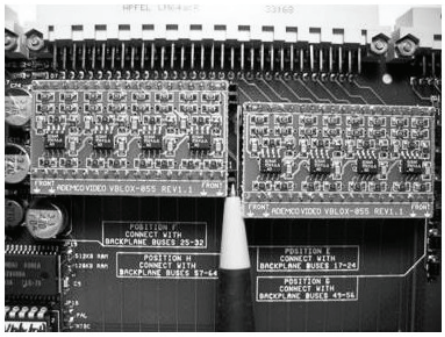


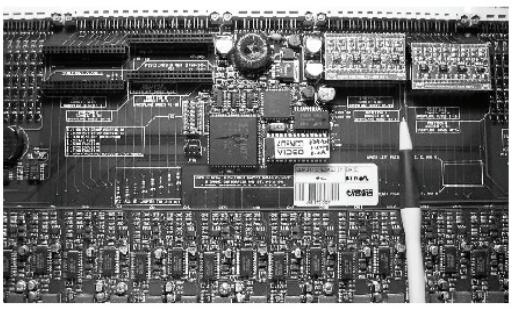


MODULE BOARD SETTING, VIDEO OUTPUTS 17-32

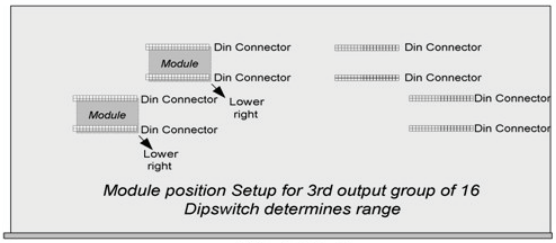


Outputs 17-32

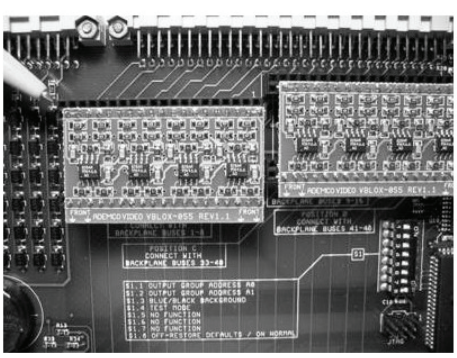


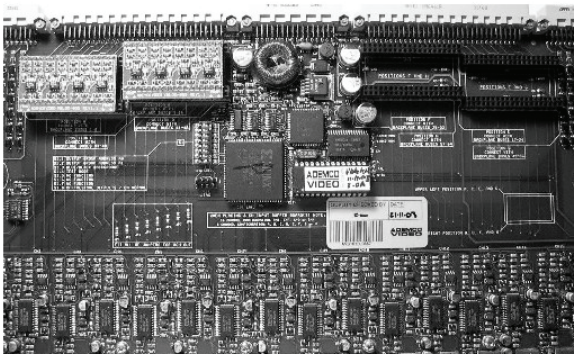


MODULE BOARD SETTING, VIDEO OUTPUTS 33-48

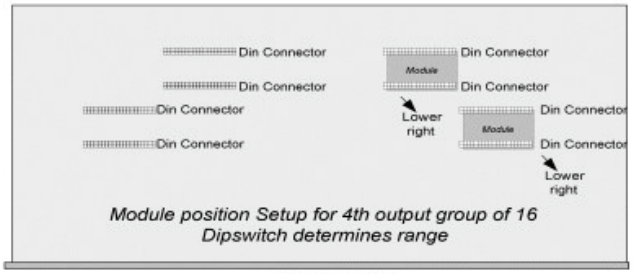


Outputs 33-48

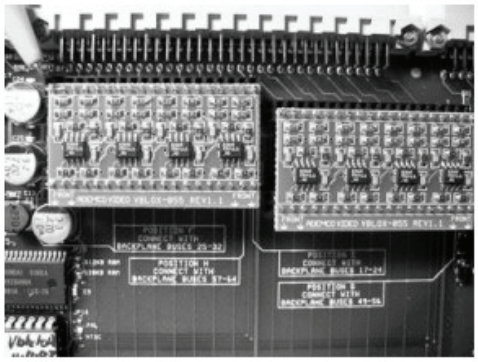


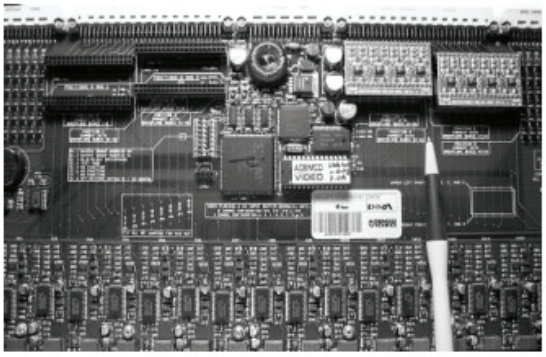


MODULE BOARD SETTING, VIDEO OUTPUTS 49-64



Outputs 49-64





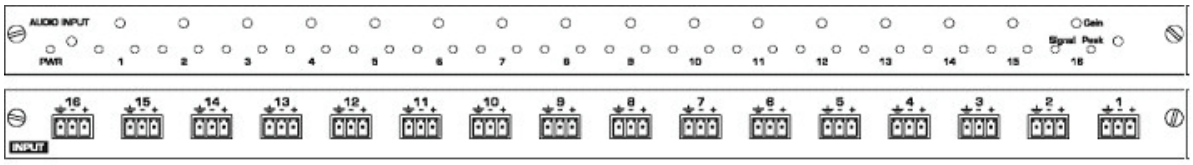
8

AUDIO INPUT MODULE

DESCRIPTION

The audio input module brings 16 balanced audio signals into the VideoBloX chassis. Each of the inputs may be routed to 1 or more of the 64 backplane channels.

Figure 8-1 Front and Rear Views of Audio Input Module



VideoBloX audio input modules are equipped with:

- Balanced input capability
- Front panel accessible gain adjustment
- Front panel signal present and overload (peak) indications
- Phantom powering option
- 20 dB pad to cater for a wide range of input signal levels.
- High pass and low pass filter options

DIP SWITCH SETTINGS

Set the Audio Input Module DIP switches as follows:

Table 8-1 DIP Switch S1 Settings

DIP Switch S1	Function
1	A0 Board Address
2	A1 Board Address
3	A2 Board Address
4	A3 Board Address
5	A4 Board Address
6	A5 Board Address
7	A6 Board Address
8	A7 Board Address

- S1 (1-8) sets the module address. This must be non-zero. A value of 1 addresses the card to accept audio inputs 1 to 16, etc.

Table 8-2 DIP Switch S2 Settings

DIP Switch S2	Function
1	Off = Output 1-64 / On = Output 65-128
2	Off = Normal / On = Review/Stereo
3	Off = Normal / On = Route 1 to 1
4	Off = Normal / On = Test Mode

- S2 (1) Turn on to associate the module with output channels 65 to 128.
- S2/2 Turn on to cause the module to work transparently as a slave to another input module. This mode allows two cards to work synchronously for switching stereo signals.
- S2/3 Turn on to cause the module to automatically switch its 16 audio inputs to 16 audio outputs on power up. In this mode, the address switch determines which group of outputs will be used.
- S2/4 Turn on to cause the module to enter test mode. In this mode, the module rapidly cycles various inputs to outputs. This is useful for bench-top faultfinding and should not normally be used in the field.

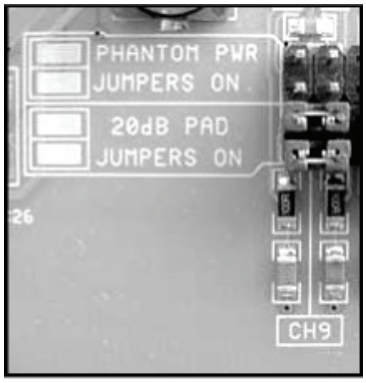
CONFIGURATION JUMPERS

Phantom Power Jumpers and 20dB Pad Jumpers

Figure 8-2 Phantom Power Jumpers and 20dB Pad Jumpers

Fit the two phantom power jumpers as per the legend shown alongside to provide phantom powering for external microphones. In all other cases, these jumpers should not be fitted.

Adding the two 20 dB pad jumpers as per the legend above reduces the gain of the audio input stage by 20 dB. This allows for high level audio inputs, such as line level signals.



Low Pass and High Pass Filter Jumpers

Figure 8-3 Low Pass and High Pass Filter Jumpers

Place the jumper in the position shown as "Hi Filter On" to enable the high pass filter function. This reduces the level of signals below 300 Hz

Place the jumper in the position shown as "Low Filter On" to enable the low pass filter function. This reduces the level of signals above 6000 Hz

ADJUSTMENTS

Gain Adjustment

Adjust the front panel gain control to an optimum level for the input source for each channel. This level will result in a bright LED indication for "Signal", with only occasional flashes of the "Peak" LED when the input signal is at the maximum expected level.

CMRR Adjustment

Figure 8-4 CMRR Adjustment

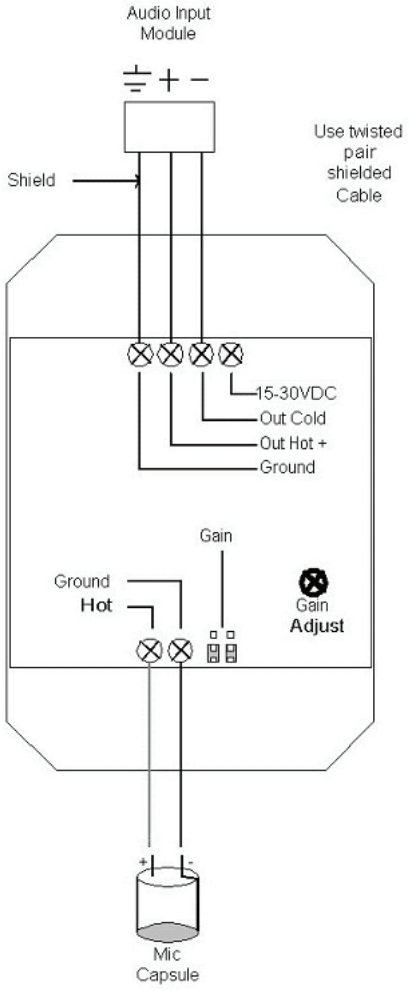
This adjustment sets the common mode rejection for the balanced inputs. It is factory calibrated and should not be adjusted by the user. The optimum level is that where a minimum output signal is obtained when both + and - input signals are driven by the identical signal (inputs shorted).

CONNECTING A MICROPHONE TO THE AUDIO INPUT MODULE

The following diagram shows how to connect a microphone to the Audio Input Card. Set the phantom power jumpers on the audio input module as described in paragraph *Phantom Power Jumpers and 20dB Pad Jumpers*

Figure 8-5 Connecting a Microphone to an Audio Input

.



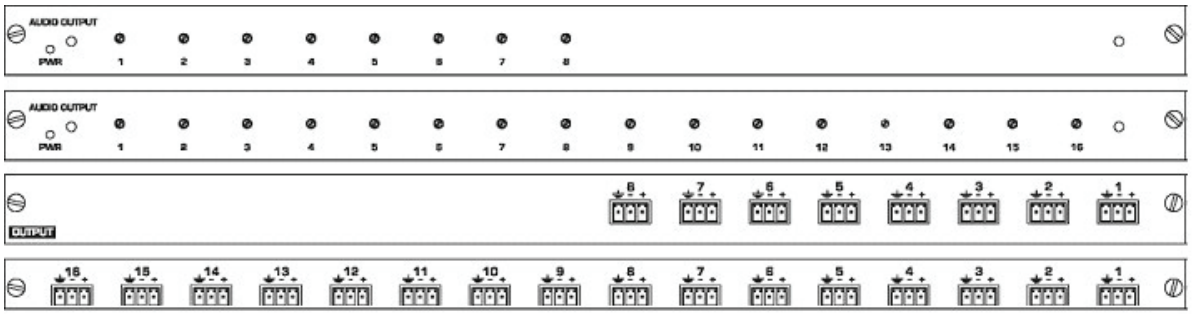
9

AUDIO OUTPUT MODULE

DESCRIPTION

The audio output module provides 16 audio output signals from the VideoBloX chassis. Each of the outputs is associated with one of the 64 backplane channels.

Figure 9-1 Front and Rear Views of 8 and 16 Channel Audio Output Modules



Modules are equipped with:

- Front panel accessible gain adjustment
- Balanced (differential) signal output.
- Limited protection against over-voltages, such as those induced by a nearby lightning strike.

The output module has a range of jumpers which are populated to determine which group of 16 audio outputs the module receives from the backplane.

Caution The user should not modify the jumpers. Output cards should be ordered for specific output channels.

10

CHASSIS INTERLINK INPUT AND OUTPUT MODULE

DESCRIPTION

The Chassis Interlink Input and Output Modules allow for multiple chassis to be connected together increasing the number of inputs of a matrix switching system.

Figure 10-1 HVB32LKO Chassis Interlink Output Module with Rear Terminal HVBRJ45X8

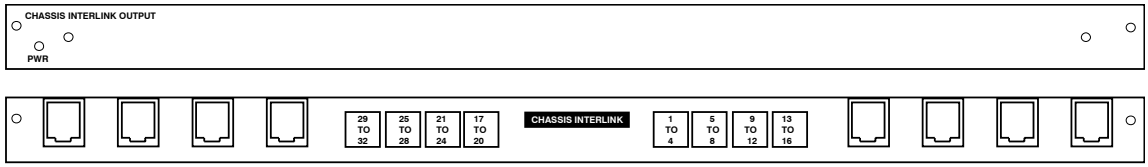
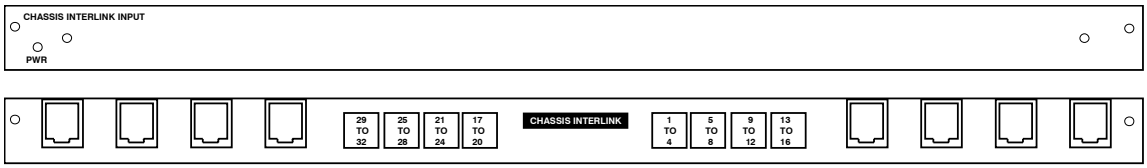


Figure 10-2 HVB32LKI Chassis Interlink Input Module with Rear Terminal HVBRJ45X8



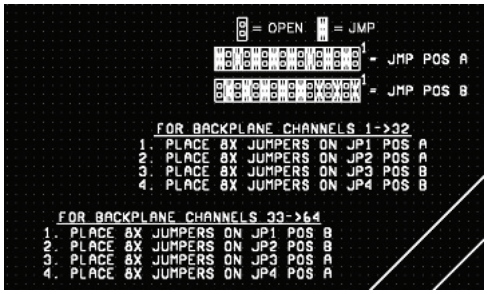
Input and Output Interlink modules have the following features:

- 32 input /output channels, allowing for high density interconnects.
- Balanced video driver and receivers allow high quality twisted pair connections for video.

The "Main" chassis of a matrix is that which incorporates the video output modules, which connect to video monitors. All other chassis are "Sub-Racks", which use interlink modules to connect their backplane signals to the main chassis.

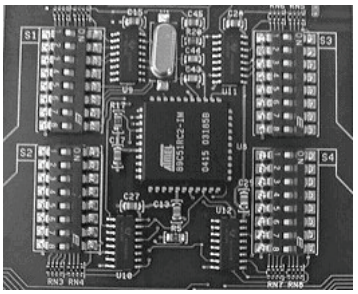
There are no adjustments / DIP switches on the interlink output module. User configurable jumpers allow this module to be available in two options, channel 1 to 32 and channel 33 to 64. Should a matrix be expanded to more than 64 outputs, these two options are still used and refer to the backplane channels within each subrack. Interlink outputs are connected to interlink inputs in the main chassis by means of cables with RJ45 connectors, each carrying 4 signals.

Figure 10-3 Jumper JP1 - JP4 Settings



DIP SWITCH SETTINGS

Figure 10-4 DIP Switch Settings



Set the Interlink Input DIP switches as follows:

Table 10-1 DIP Switch S1 and S2 Settings

DIP Switch	Function	
S1.1	A0	Interlink Start Address
S1.2	A1	
S1.3	A2	
S1.4	A3	
S1.5	A4	
S1.6	A5	
S1.7	A6	
S1.8	A7	
S2.1	A8	
S2.2	A9	
S2.3	A10	
S2.4	B0	Output Address
S2.5	B1	
S2.6	B2	
S2.7	B3	
S2.8	B4	

- Set the "Start Address" SW1 (1-8) and SW2 (1-3) to match the address of the first input card within the connected sub-chassis.
- Set S2 (4-8) to determine which group of 64 output signals this module will control. For monitors 1-64, SW2/4 - SW2/8 should be set to 00000; for monitors 65-128 SW2/4 - SW2/8 should be set to 00001.

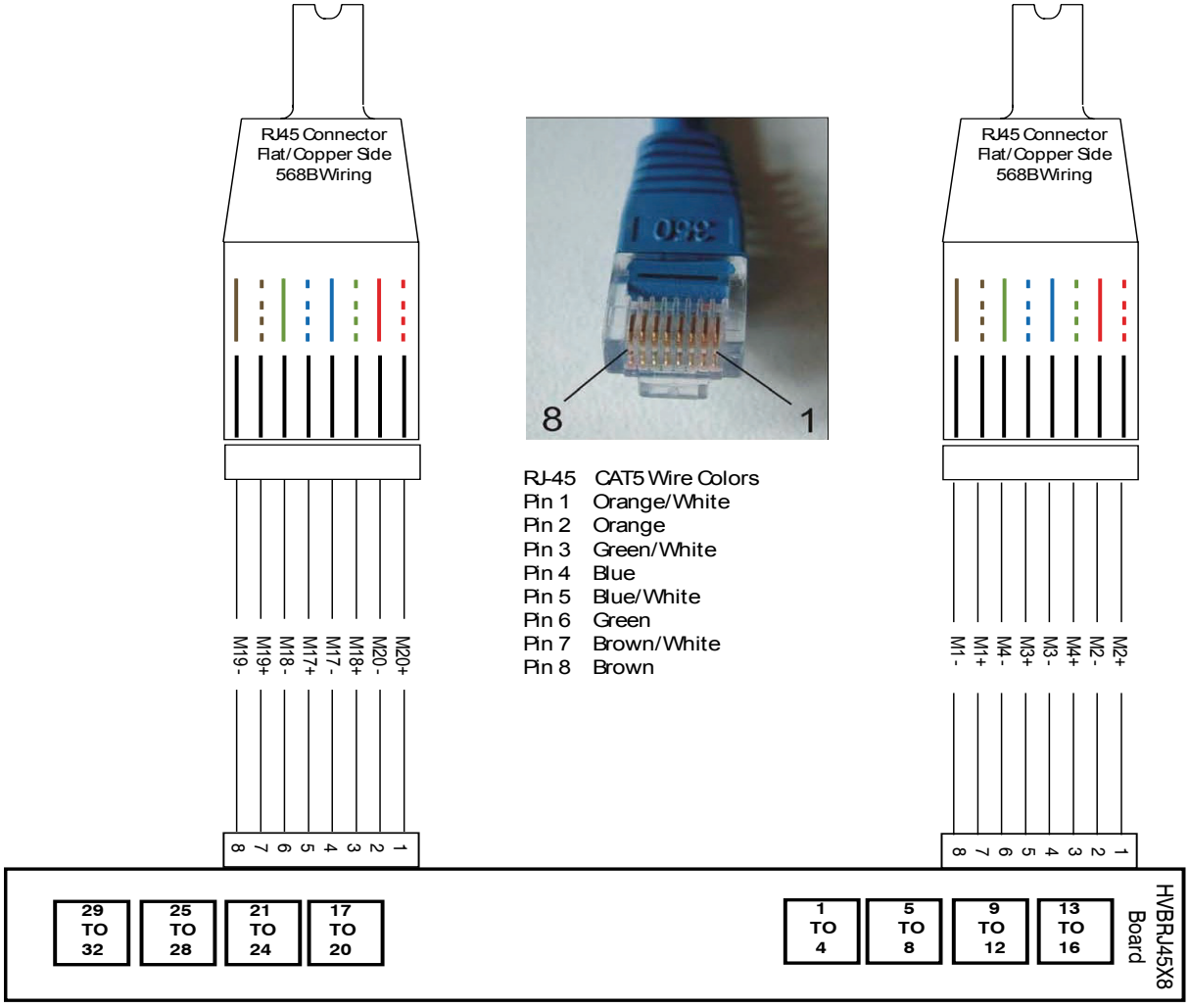
Table 10-2 DIP Switch S3 and S4 Settings

DIP Switch	Function	
S3.1	A0	Interlink End Address
S3.2	A1	
S3.3	A2	
S3.4	A3	
S3.5	A4	
S3.6	A5	
S3.7	A6	
S3.8	A7	
S4.1	A8	
S4.2	A9	
S4.3	A10	
S4.4	P0	Protocol
S4.5	P1	
S4.6	Off = Normal / On = Switch 1 to 1	
S4.7	Off = Normal / On = Test mode	
S4.8	Not Used	

- Set the "End Address" SW3 (1-8) and SW4 (1-3) to match the address of the last input card within the connected sub-chassis.
- SW4/4-5 are reserved for future use in selecting protocols.
- SW4 (6) is used for testing to switch inputs to the outputs, camera 1 to monitor 1, camera 2 to monitor 2, camera 15 to monitor 15, etc.
- Turn on SW4 (7) to enter test mode. In this mode, the module cycles various inputs to outputs. This is useful for bench-top fault-finding and should not normally be used in the field.
- SW4 (8) is not used.

CONNECTIONS, HVB32RJ45X8

Figure 10-5 RJ45 Connections



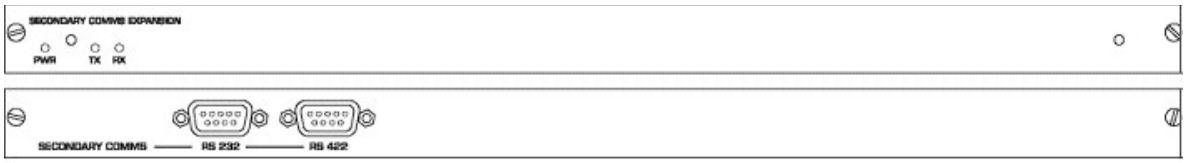
11

SECONDARY COMMUNICATIONS EXPANSION MODULE

DESCRIPTION

The Secondary Communications Expansion Module is used to access the secondary backplane communications channel. This channel is generally used when two CPUs are fitted into the same chassis and the second CPU has communications jumpers configured accordingly. Note that this differs from a redundant CPU (as described in section 13) where only one CPU is active at any one time and both CPUs use the same backplane communications channel.

Figure 11-1 Front and Rear View of Secondary Communications Expansion Module



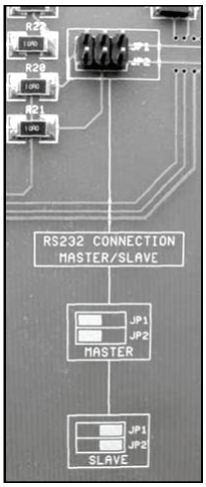
The Secondary Communications Expansion Module has the following features:

- RS232 and/or RS422 communication options.
- RS422 / RS232 master or slave connection pin-out.
- Capability to connect to backplane communications as a master or slave device.

Jumper Settings

RS232 Settings

Figure 11-2 JP1 and JP2 RS232 Jumper Settings



JP1 and JP2 change the pin-out of the RS232 DB9 connector, by swapping the TXD and RXD signals as per the following table.

Table 11-1 JP1 and JP2 Jumper Settings

Pin	Slave	Master
2	TXD	RXD
3	RXD	RXD
5	Gnd	Gnd

Pin 1, 4, and 6 are internally connected. Pin 7 and 8 are internally connected.

RS422 Settings

Figure 11-3 JP3 RS422 Jumper Settings

JP3 changes the pinout of the RS422 DB9 connector, by swapping the transmit and receive pairs as per the following table.

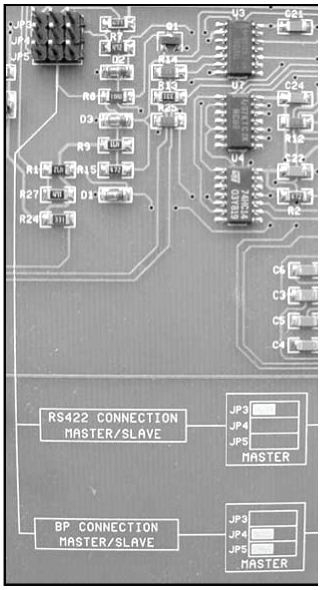


Table 11-2 JP3 Jumper Settings

Pin	Slave	Master
1	RX[-]	TX[-]
2	RX[+]	TX[+]
3	TX[+]	RX[+]
4	TX[-]	RX[-]
5	Gnd	Gnd
6	+24 VDC	+24 VDC
7	RTS[-]	RTS[-]
8	RTS[+]	RTS[+]
9	Gnd	Gnd

Backplane Communication Settings

Set the "BP Connection" to "Master" if the controller is external or to "Slave" if this connection connects to a CPU within the chassis.

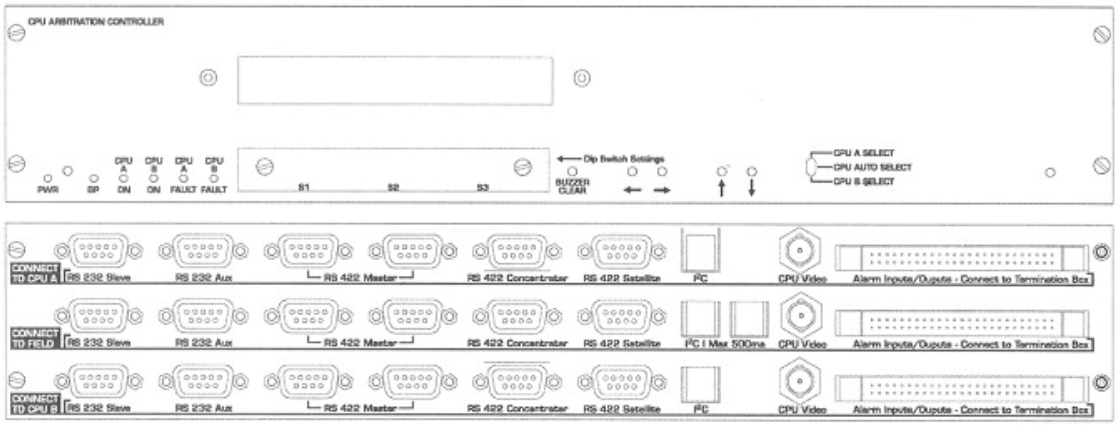
12

CPU ARBITRATION CONTROLLER MODULE

DESCRIPTION

The CPU Arbitration Module monitors the operation of the CPU in a VideoBloX matrix. Should a fault be detected, the unit may be configured to automatically switch over to a second VideoBloX CPU.

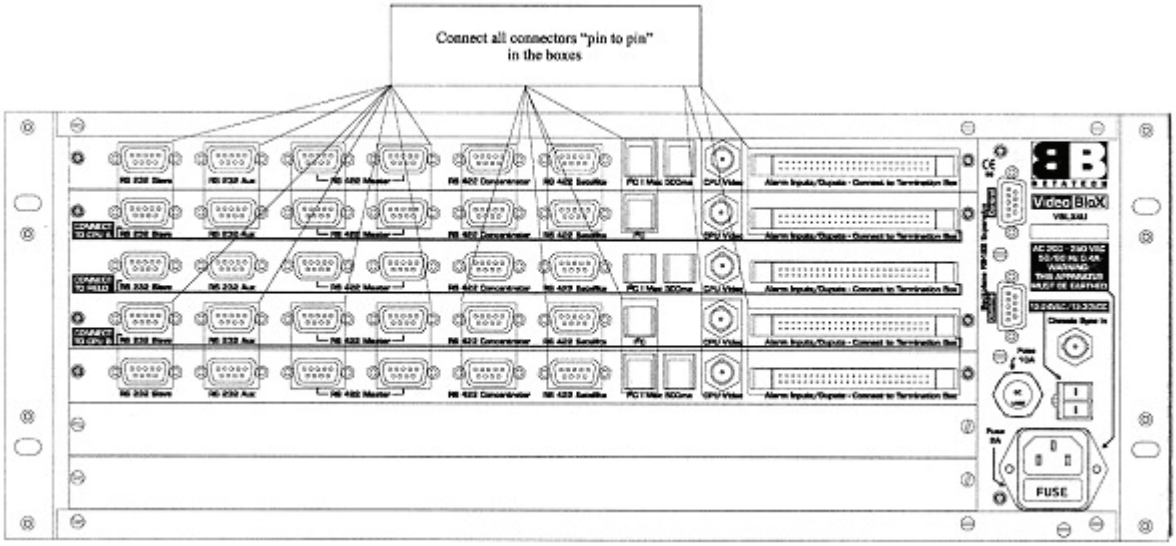
Figure 12-1 Front and Rear View of CPU Arbitration Module



OPERATION

The Arbitration module has connectors to receive all relevant signals from the two CPUs to which it is connected. The default mode (which will be selected with power off) is to select CPU A. Communications, alarms, I2C expansion and diagnostic video are all routed via relays to field connections. It is possible to force the Arbitration module to route either the connections from CPU A or those from CPU B by means of the front panel CPU selection switch. When this switch is set to the "Auto Select" position, the system will automatically monitor and select an appropriate CPU.

Figure 12-2 Typical Rear View of Arbitration Module and 2 CPU Modules in 4U Chassis



The VideoBloX CPU must be equipped with firmware revision 4.96 or later. The CPU has built in functionality to monitor the status of communications activity and operation of the real time clock. The result of the CPU health check is transmitted on the backplane communications channel.

The Arbitration module receives the system status information. Each time a valid message is received by the Arbitration unit, the "BP" LED will flash. The received health check information is compared to the previous status. Should a change be detected, the Arbitration module will check if the monitoring for the detected status change is enabled. If a fault is detected an alarm will be sounded and a message displayed on the Arbitration module. Should the CPU selection switch be in the "Auto" position, then the system will automatically switch over to the alternate CPU. Switching will be inhibited if the alternate CPU currently shows the same fault.

When a fault is detected, a buzzer will sound on the Arbitration module. The buzzer may be silenced by pressing the "Buzzer Clear" button. Pressing the button for a second time, will remove the description of the previous error from the Arbitration display.

To clear the Arbitration module internal error status, press and hold the "Buzzer Clear" button for 5 seconds.

The active CPU is indicated by illuminating either the "CPU A On" or "CPU B On" LEDs. Should one or more errors be present on a CPU, the associated CPU fault LED will be illuminated.

CONNECTIONS

For a complete description of the functions and pin-outs of the connectors, please refer to *Chapter 3, CPU MODULE*, *CONNECTIONS*.

With reference to the above rear view of the arbitration module in a 4U chassis.

- All connections from CPU A are looped into the Arbitration connectors marked "Connect to CPU A".
- All connections from CPU B are looped into the Arbitration connectors marked "Connect to CPU B".
- Connections to field devices are connected to the Arbitration connectors marked "Connect to Field".

SWITCH SETTINGS

DIP switch S1 and S2 select which errors will be monitored by the Arbitration module. When a switch in on, monitoring of the associated operation is enabled.

Table 12-1 CPU Arbitration Module DIP Switch Settings

Switch S1 or S2 position	Monitoring Function
1	Backplane communications
2	Bossware master port communications
3	PC port communications
4	Auxiliary port communications
5	Concentrator port communications
6	Satellite port communications
7	Real time clock
8	Reserved

The remaining DIP switches are currently reserved

FRONT PANEL PUSH BUTTON OPERATION

The Arbitration module allows for viewing of the status of the attached CPUs. Selection of CPU is done by pressing either the up or down arrow key.

Selection of the parameter to be displayed is done by pressing the left and right arrow keys. After approximately 30 seconds, the system will automatically revert to the standard display mode. The following parameters may be monitored:

Table 12-2 CPU Arbitration Module Front Panel Push Buttons

Parameter	Description
Status	Zero for no faults of a hex representation of the combined fault status
Reset Count	The number of times the CPU has been restarted
Start Time	The date and time when the CPU was last restarted
End Time	The date and time when the CPU was last stopped
Backplane Comms	The error status for the backplane communications channel (see Note 1)
Master Comms	The error status for the master communications channel (see Note 1)
PC Comms	The error status for the PC communications channel (see Note 1)
Aux Comms	The error status for the auxiliary communications channel (see Note 1)
Concentrator Comms	The error status for the concentrator communications channel (see Note 1)
Satellite Comms	The error status for the satellite communications channel (see Note 1)
RTC Status	The error status for the real time clock (see Note 1)

Note The display will read "OK" for no error, "Err" if an error is detected and "Masked" if an error is detected, BUT the associated function DIP switch is not enabled.

A

BINARY ADDRESS VALUES

Table A-1 Binary Address Values

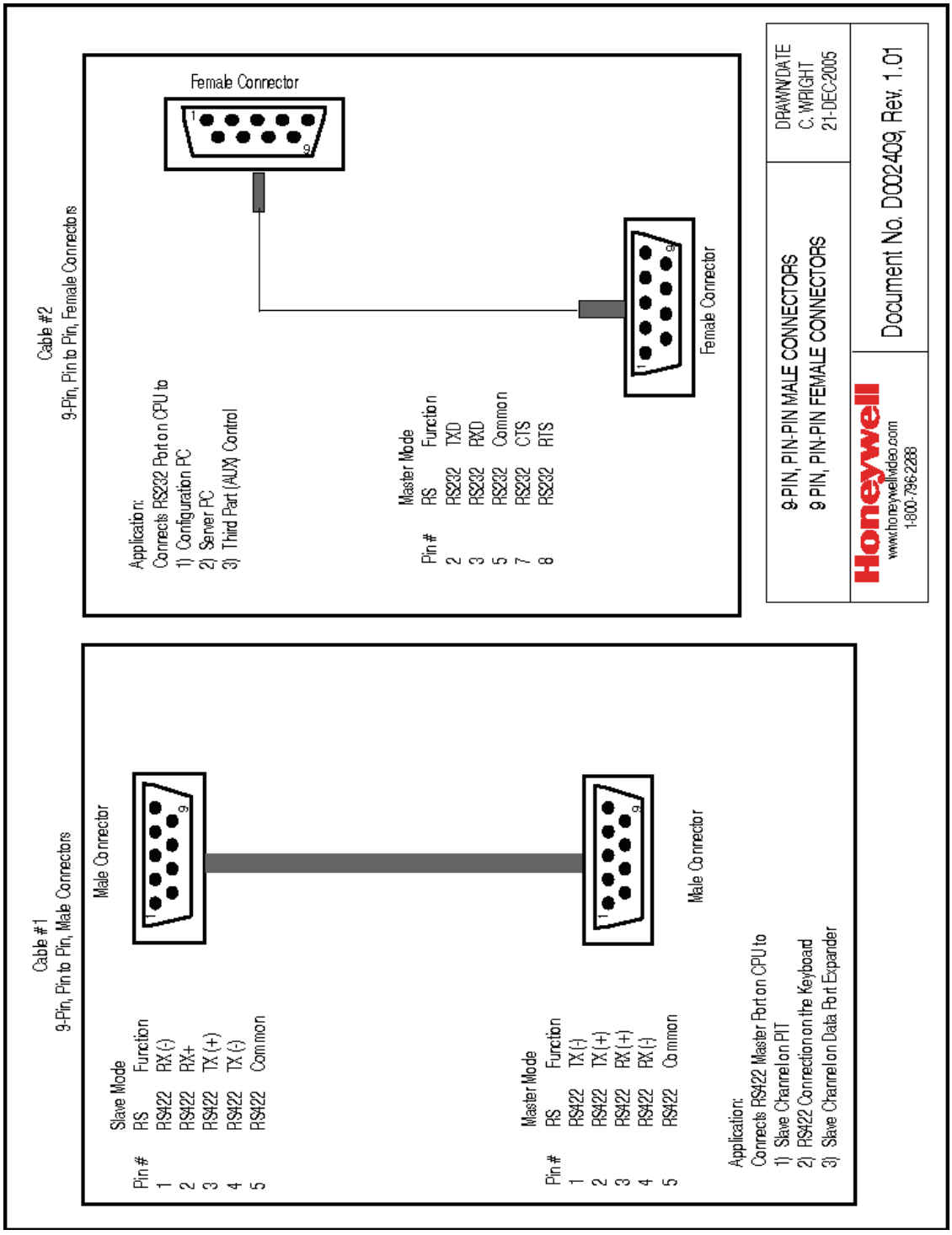
A8	A7	A6	A5	A4	A3	A2	A1	Unit Address
Off	Off	Off	Off	Off	Off	Off	Off	0-not allowed
Off	Off	Off	Off	Off	Off	Off	On	1
Off	Off	Off	Off	Off	Off	On	Off	2
Off	Off	Off	Off	Off	Off	On	On	3
Off	Off	Off	Off	Off	On	Off	Off	4
Off	Off	Off	Off	Off	On	Off	On	5
Off	Off	Off	Off	Off	On	On	Off	6
Off	Off	Off	Off	Off	On	On	On	7

B

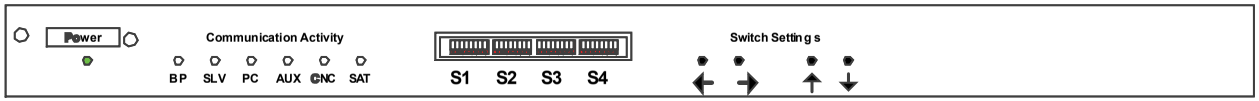
SYSTEM INSTALLATION DIAGRAMS

PURPOSE

This appendix provides installation drawings for connecting peripheral devices to the VideoBloX Matrix Switching System.


Cable #1
9-Pin, Pin to Pin, Male Connectors
Male Connector
Slave Mode
Pin # RS Function
1 RS422 RX (-)
2 RS422 RX+
3 RS422 TX (+)
4 RS422 TX (-)
5 RS422 Common
Male Connector
Master Mode
Pin # RS Function
1 RS422 TX (-)
2 RS422 TX (+)
3 RS422 RX (+)
4 RS422 RX (-)
5 RS422 Common
Application:
Connects RS422 Master Port on CPU to
1) Slave Channel on PIT
2) RS422 Connection on the Keyboard
3) Slave Channel on Data Port Expander
Cable #2
9-Pin, Pin to Pin, Female Connectors
Female Connector
Application:
Connects RS232 Port on CPU to
1) Configuration PC
2) Server PC
3) Third Part (AUX) Control
Female Connector
Master Mode
Pin # RS Function
2 RS232 TXD
3 RS232 RXD
5 RS232 Common
7 RS232 CTS
8 RS232 RTS
9-PIN, PIN-PIN MALE CONNECTORS
9 PIN, PIN-PIN FEMALE CONNECTORS
DRAWN DATE
C. WRIGHT 21-DEC-2005
Honeywell
www.honeywellvideo.com
1-800-796-2288
Document No. D002409, Rev. 1.01

VideoBloX CPU Front Panel with switch cover removed



S1 **SW7=ON**

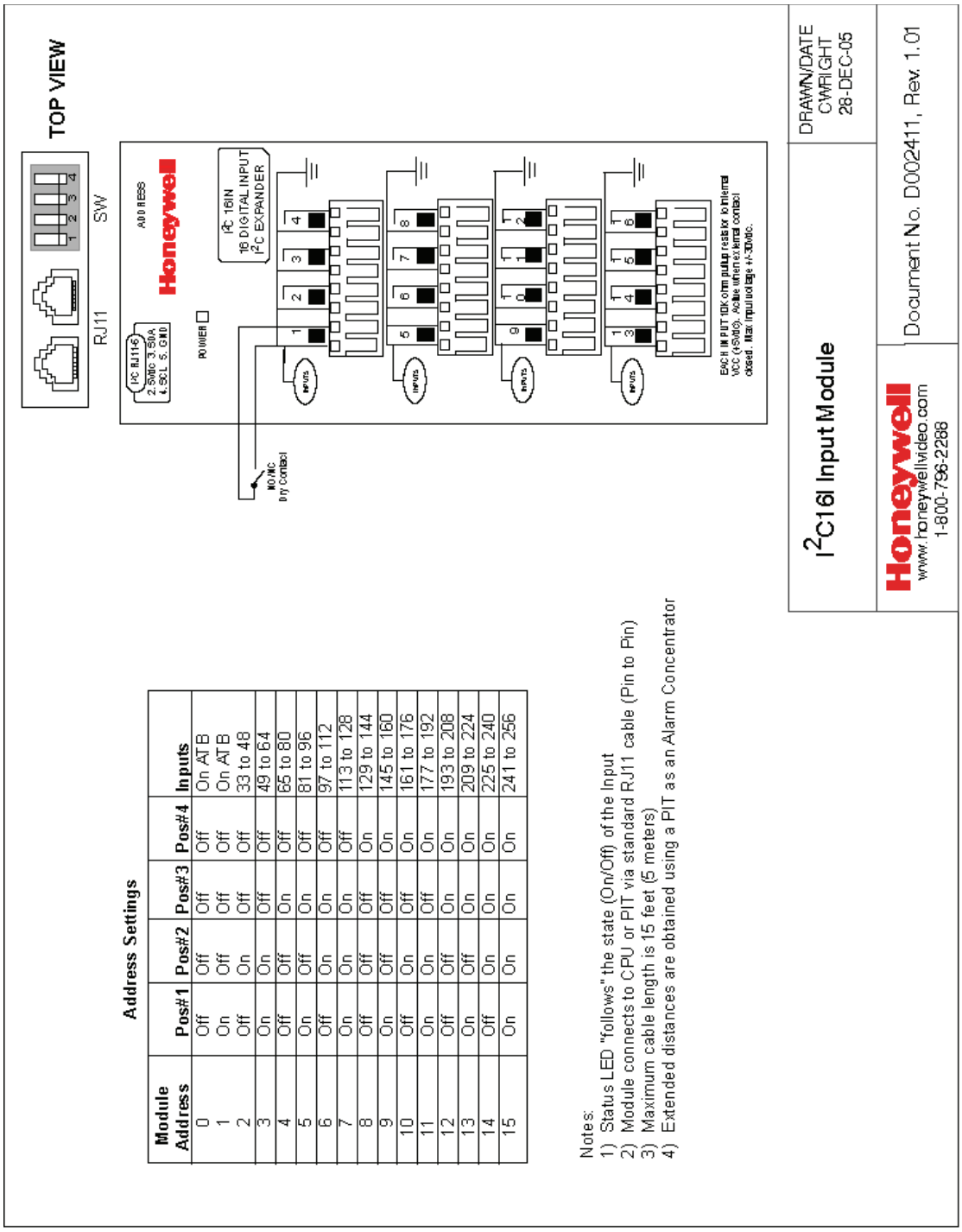
S2 **SW2=ON** **SW5=ON**

S3 **SW1=ON**

S4 **SW2=ON**

		Recommended Settings		
Switch	**Positions**	**Set**	**Speed**	**Function**
1	7&8	7 On, 8 Off	19.2 KB	PC Communication Port
2	1&2	1 Off, 2 On	57.6 KB	Auxiliary Port (third party contro)
2	5&6	5 On, 6 Off	19.2 KB	Master Ports
3	1&2	1 On, 2 Off	19.2 KB	Satellite Port
3	5&6	5 Off, 6 Off	9600 Baud	Concentrator Port
Switch	**Positions**	**Set**	**Feature**	**Function**
4	1	Off	Skip	Skip/Include Channel on Video Loss
4	2	On	Title On	Title On/Off on Output
4	3&4	3 Off, 4 Off	Source	Video Loss Source - Input Module

VIDEOBLOX CPU SWITCH SETTINGS	DRAWN/DATE CWRIGHT 22-DEC-05
Honeywell www.honeywellvideo.com 1-800-796-2288	Document No. D002410, Rev. 1.01



Address Settings

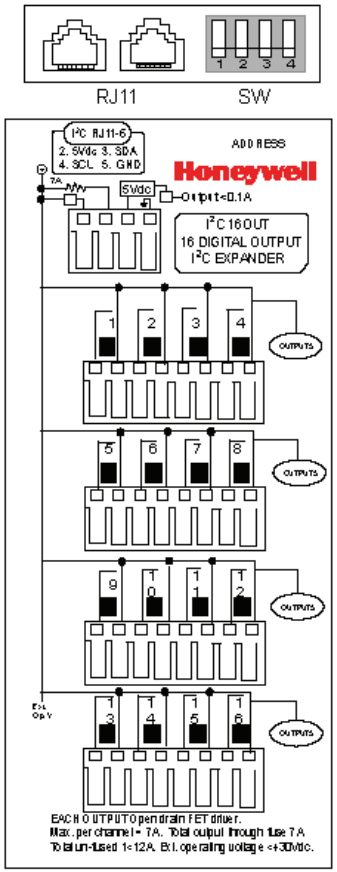
Module Address	Pos#1	Pos#2	Pos#3	Pos#4	Inputs
0	Off	Off	Off	Off	On AT B
1	On	Off	Off	Off	On AT B
2	Off	On	Off	Off	33 to 48
3	On	On	Off	Off	49 to 64
4	Off	Off	On	Off	65 to 80
5	On	Off	On	Off	81 to 96
6	Off	On	On	Off	97 to 112
7	On	On	On	Off	113 to 128
8	Off	Off	Off	On	129 to 144
9	On	Off	Off	On	145 to 160
10	Off	On	Off	On	161 to 176
11	On	On	Off	On	177 to 192
12	Off	Off	On	On	193 to 208
13	On	Off	On	On	209 to 224
14	Off	On	On	On	225 to 240
15	On	On	On	On	241 to 256

Notes:
1) Status LED "follows" the state (On/Off) of the Input
2) Module connects to CPU or PIT via standard RJ11 cable (Pin to Pin)
3) Maximum cable length is 15 feet (5 meters)
4) Extended distances are obtained using a PIT as an Alarm Concentrator

Address Settings

Module Address	Pos#1	Pos#2	Pos#3	Pos#4	Inputs
0	Off	Off	Off	Off	On AT B
1	On	Off	Off	Off	On AT B
2	Off	On	Off	Off	33 to 48
3	On	On	Off	Off	49 to 64
4	Off	Off	On	Off	65 to 80
5	On	Off	On	Off	81 to 96
6	Off	On	On	Off	97 to 112
7	On	On	On	Off	113 to 128
8	Off	Off	Off	On	129 to 144
9	On	Off	Off	On	145 to 160
10	Off	On	Off	On	161 to 176
11	On	On	Off	On	177 to 192
12	Off	Off	On	On	193 to 208
13	On	Off	On	On	209 to 224
14	Off	On	On	On	225 to 240
15	On	On	On	On	241 to 256

Notes:
1) Status LED "follows" the state (On/Off) of the Input
2) Module connects to CPU or PIT via standard RJ11 cable (Pin to Pin)
3) Maximum cable length is 15 feet (5 meters)
4) Extended distances are obtained using a PIT as an Alarm Concentrator



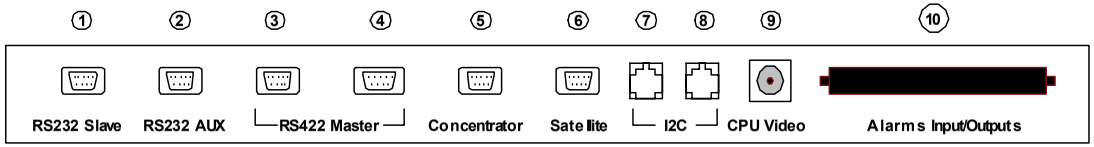
I²C16O Output Module

DRAWN/DATE
CWRIGHT
28-DEC-05

Honeywell
www.honeywellvideo.com
1-800-796-2288

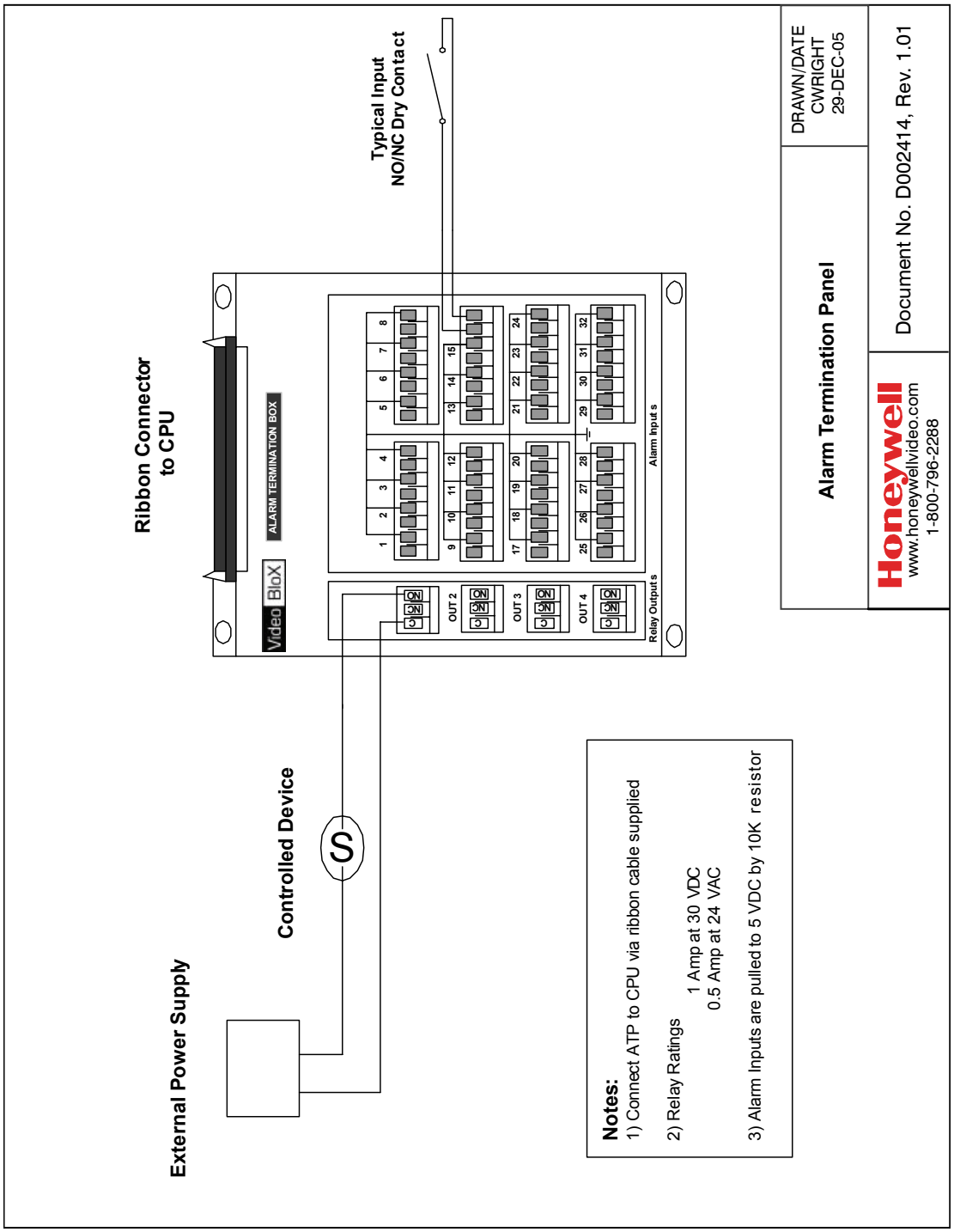
Document No. D002412, Rev. 1.01

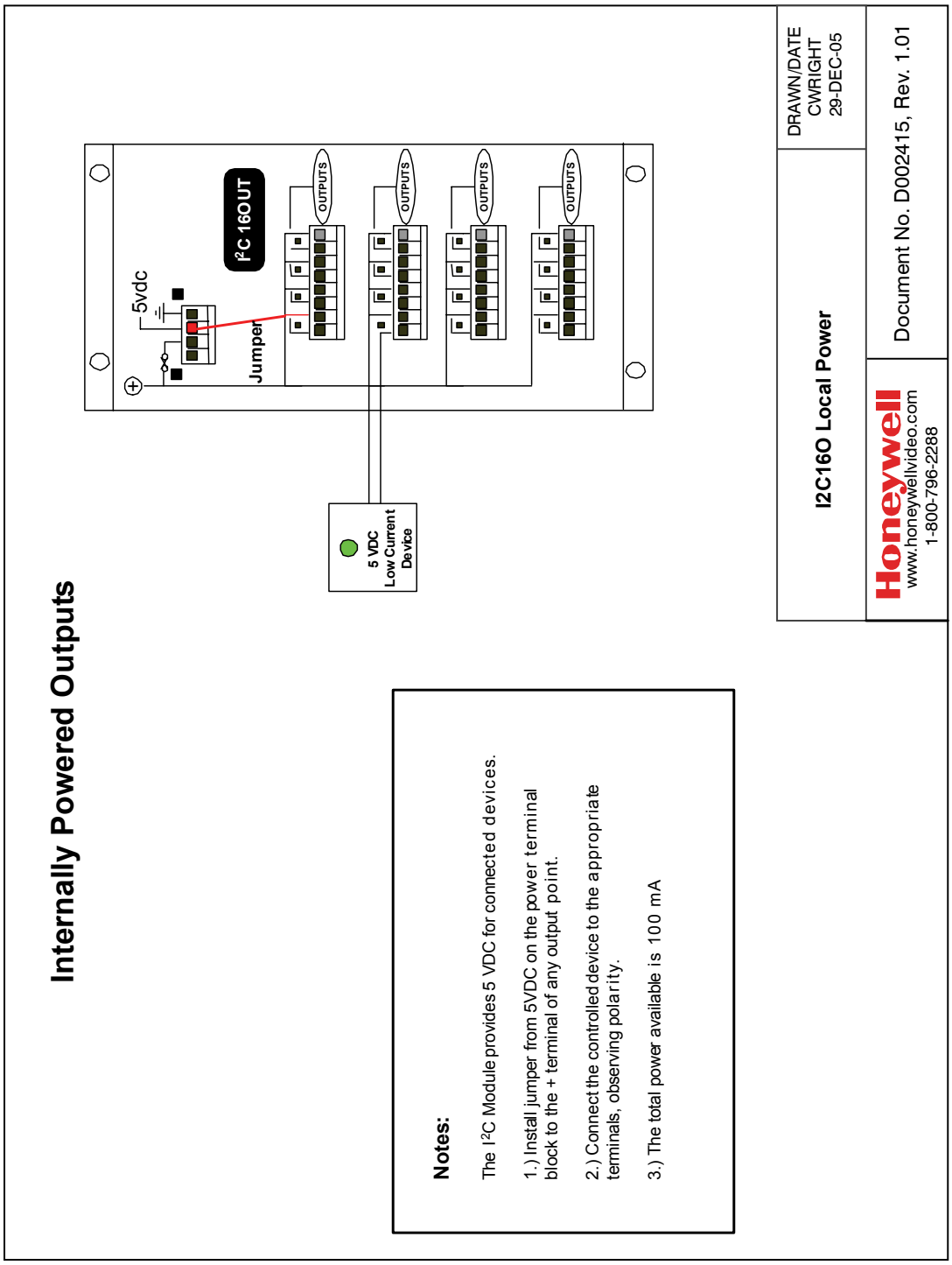
CPU Rear Panel

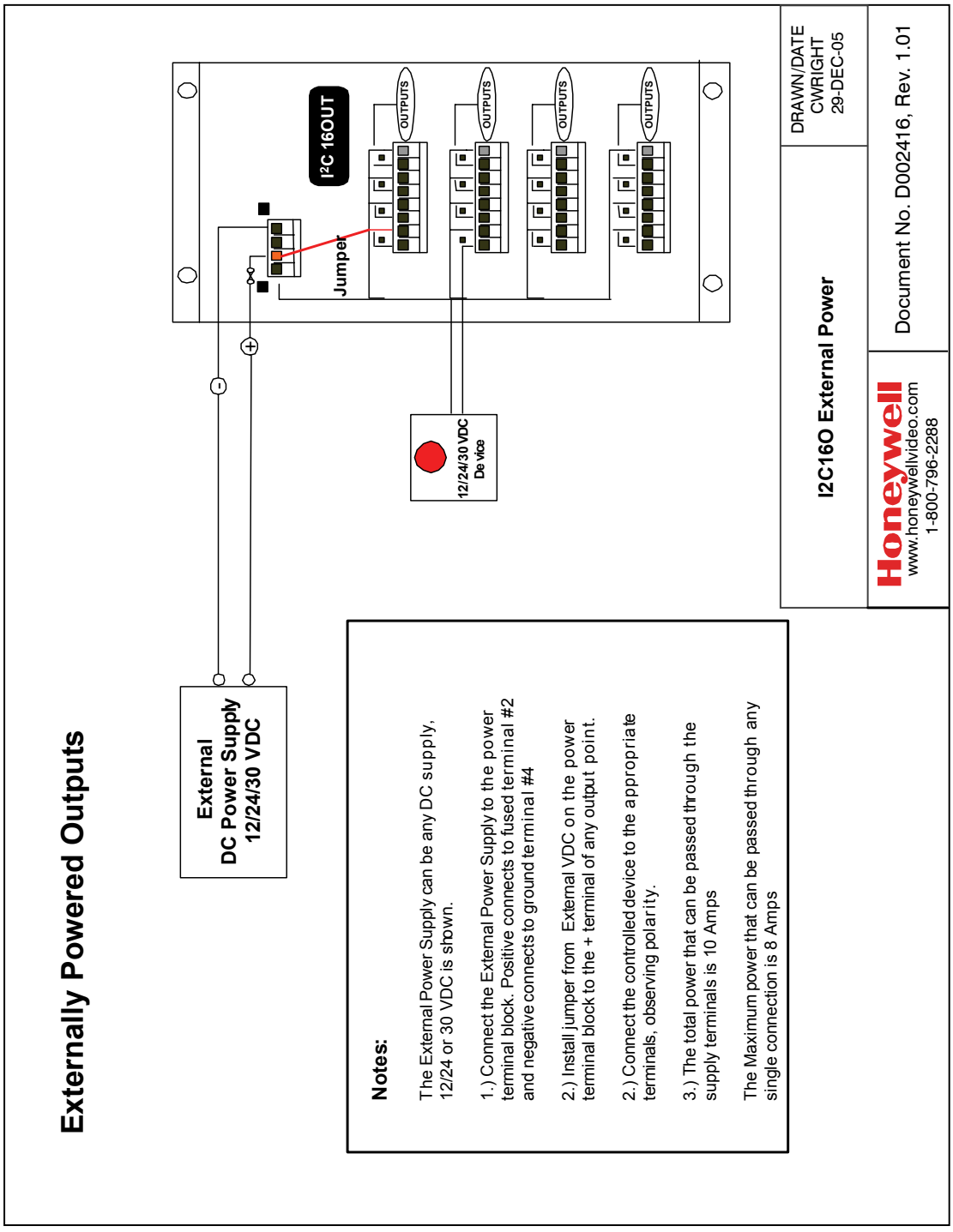


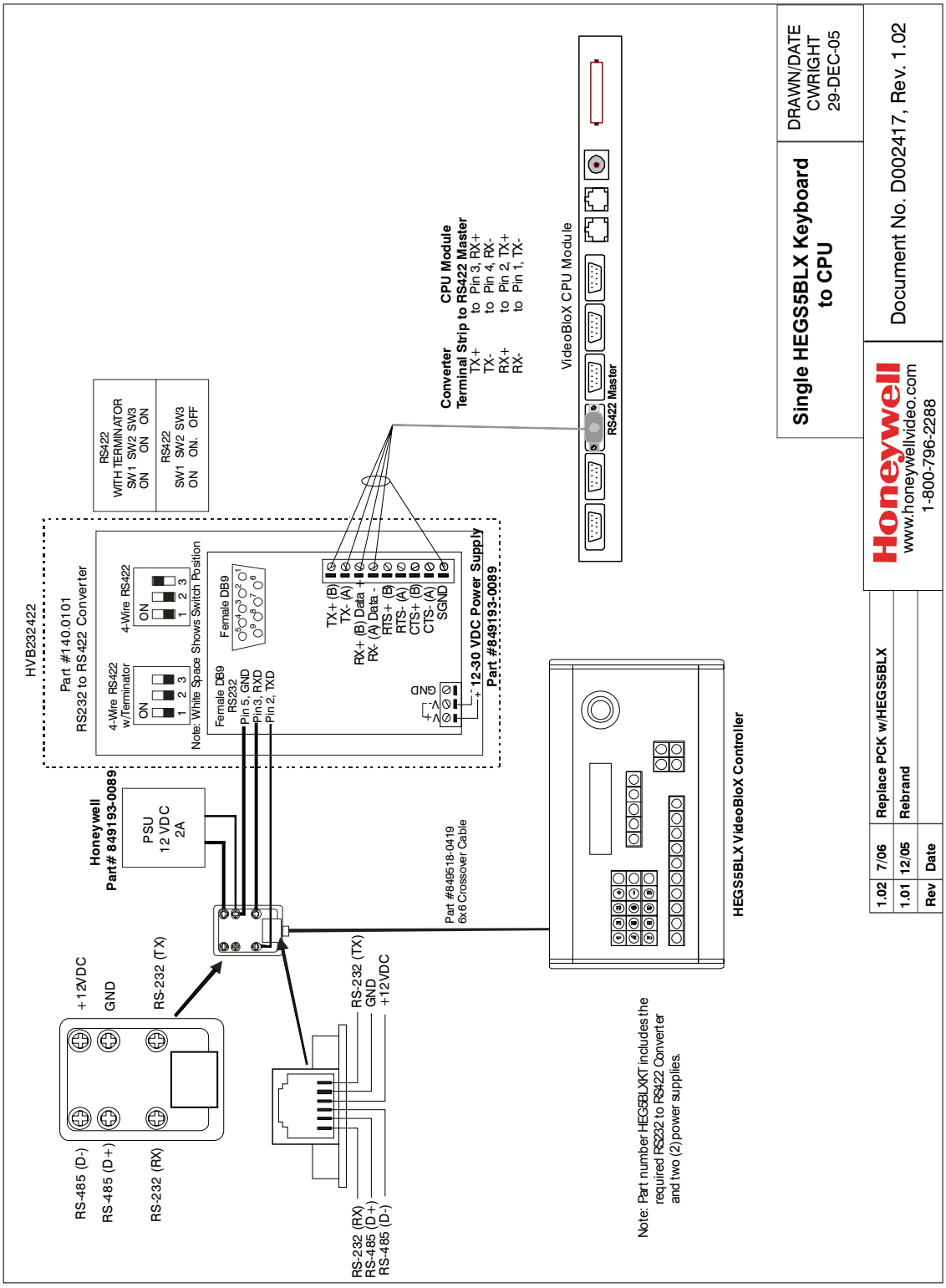
Connection	Named	Type	Function
1	RS232 Slave	RS232	Connects CPU to Configuration PC or CCTV Server
2	RS232 AUX	RS232	Connects CPU to Auxiliary System (e.g. Access Control)
3 & 4	RS422 Master	RS422	Provides VideoBloX control protocol to connected devices
5	RS422 Concentrator	RS422	Reserved for future application
6	RS422 Satellite	RS422	Reserved for future application
7 & 8	I2C	I2C	Alarm Input and Control Output to I2C Modules
9	CPU Video	Composite	Diagnostic Video Output to monitor
10	Alarm Input/Output	Backplane	Connection for Alarm Terminal Module

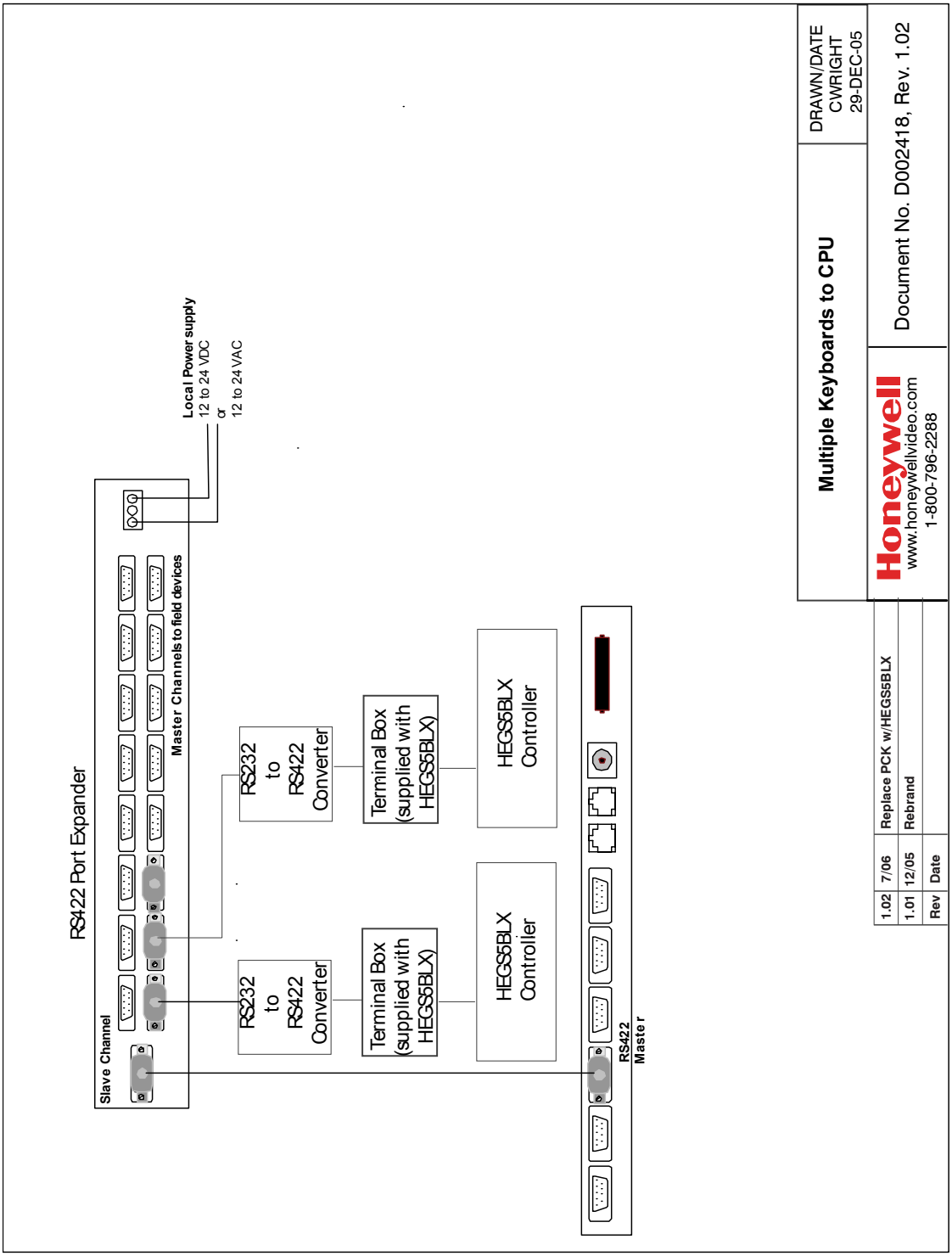
VIDEOBLOX CPU REAR PANEL	DRAWN/DATE CWRIGHT 29-DEC-05
Honeywell www.honeywellvideo.com 1-800-796-2288	Document No. D002413, Rev. 1.01


Ribbon Connector
to CPU
Typical Input
NO/NC Dry Contact
ALARM TERMINATION BOX
VideoBloX
OUT 2
OUT 3
OUT 4
Relay Outputs
Alarm Inputs
External Power Supply
Controlled Device
S
Notes:
1) Connect ATP to CPU via ribbon cable supplied
2) Relay Ratings
1 Amp at 30 VDC
0.5 Amp at 24 VAC
3) Alarm Inputs are pulled to 5 VDC by 10K resistor
Alarm Termination Panel
DRAWN/DATE
CWRIGHT
29-DEC-05
Honeywell
www.honeywellvideo.com
1-800-796-2288
Document No. D002414, Rev. 1.01


Internally Powered Outputs
5vdc
Jumper
I²C 16O UT
OUTPUTS
OUTPUTS
OUTPUTS
OUTPUTS
5 VDC
Low Current
Device
Notes:
The I²C Module provides 5 VDC for connected devices.
1.) Install jumper from 5VDC on the power terminal block to the + terminal of any output point.
2.) Connect the controlled device to the appropriate terminals, observing polarity.
3.) The total power available is 100 mA
I2C16O Local Power
DRAWN/DATE
CWRIGHT
29-DEC-05
Honeywell
www.honeywellvideo.com
1-800-796-2288
Document No. D002415, Rev. 1.01


Externally Powered Outputs
External
DC Power Supply
12/24/30 VDC
I2C 16OUT
Jumper
OUTPUTS
OUTPUTS
OUTPUTS
OUTPUTS
12/24/30 VDC
Device
Notes:
The External Power Supply can be any DC supply, 12/24 or 30 VDC is shown.
1.) Connect the External Power Supply to the power terminal block. Positive connects to fused terminal #2 and negative connects to ground terminal #4
2.) Install jumper from External VDC on the power terminal block to the + terminal of any output point.
2.) Connect the controlled device to the appropriate terminals, observing polarity.
3.) The total power that can be passed through the supply terminals is 10 Amps
The Maximum power that can be passed through any single connection is 8 Amps
I2C16O External Power
DRAWN/DATE
CWRIGHT
29-DEC-05
Honeywell
www.honeywellvideo.com
1-800-796-2288
Document No. D002416, Rev. 1.01


Single HEGS5BLX Keyboard to CPU
DRAWN/DATE CWRIGHT 29-DEC-05
Honeywell
www.honeywellvideo.com
1-800-796-2288
Document No. D002417, Rev. 1.02
Rev | Date | Rebrand
1.02 | 7/06 | Replace PCK w/HEGS5BLX
1.01 | 12/05 | Rebrand
HEGS5BLX VideoBloX Controller
VideoBloX CPU Module
RS422 Master
Converter Terminal Strip to RS422 Master
TX+ to Pin 3, RX+
TX- to Pin 4, RX-
RX+ to Pin 2, TX+
RX- to Pin 1, TX-
CPU Module
HVB232422
Part #140.0101
RS232 to RS422 Converter
4-Wire RS422 w/Terminator
4-Wire RS422
Female DB9 RS232
Pin 5, GND
Pin 3, RXD
Pin 2, TXD
Female DB9
Note: White Space Shows Switch Position
TX+ (B)
TX- (A)
RX+ (B) Data +
RX- (A) Data -
RTS+ (B)
RTS- (A)
CTS+ (B)
CTS- (A)
SGND
GND
+ 12-30 VDC Power Supply
Part #849193-0089
RS422 WITH TERMINATOR SW1 ON SW2 ON SW3 ON
RS422 SW1 ON SW2 ON SW3 OFF
Honeywell Part# 849193-0089
PSU 12 VDC 2A
Part #849518-0419 6x6 Crossover Cable
+12VDC
GND
RS-232 (TX)
RS-485 (D-)
RS-485 (D+)
RS-232 (RX)
Note: Part number HEGS5BLXKT includes the required RS232 to RS422 Converter and two (2) power supplies.


RS422 Port Expander
Slave Channel
Master Channels to field devices
Local Power supply
12 to 24 VDC
or
12 to 24 VAC
RS232
to
RS422
Converter
RS232
to
RS422
Converter
Terminal Box
(supplied with
HEGS5BLX)
Terminal Box
(supplied with
HEGS5BLX)
HEGS5BLX
Controller
HEGS5BLX
Controller
RS422
Master
Multiple Keyboards to CPU
DRAWN/DATE
CWRIGHT
29-DEC-05
Honeywell
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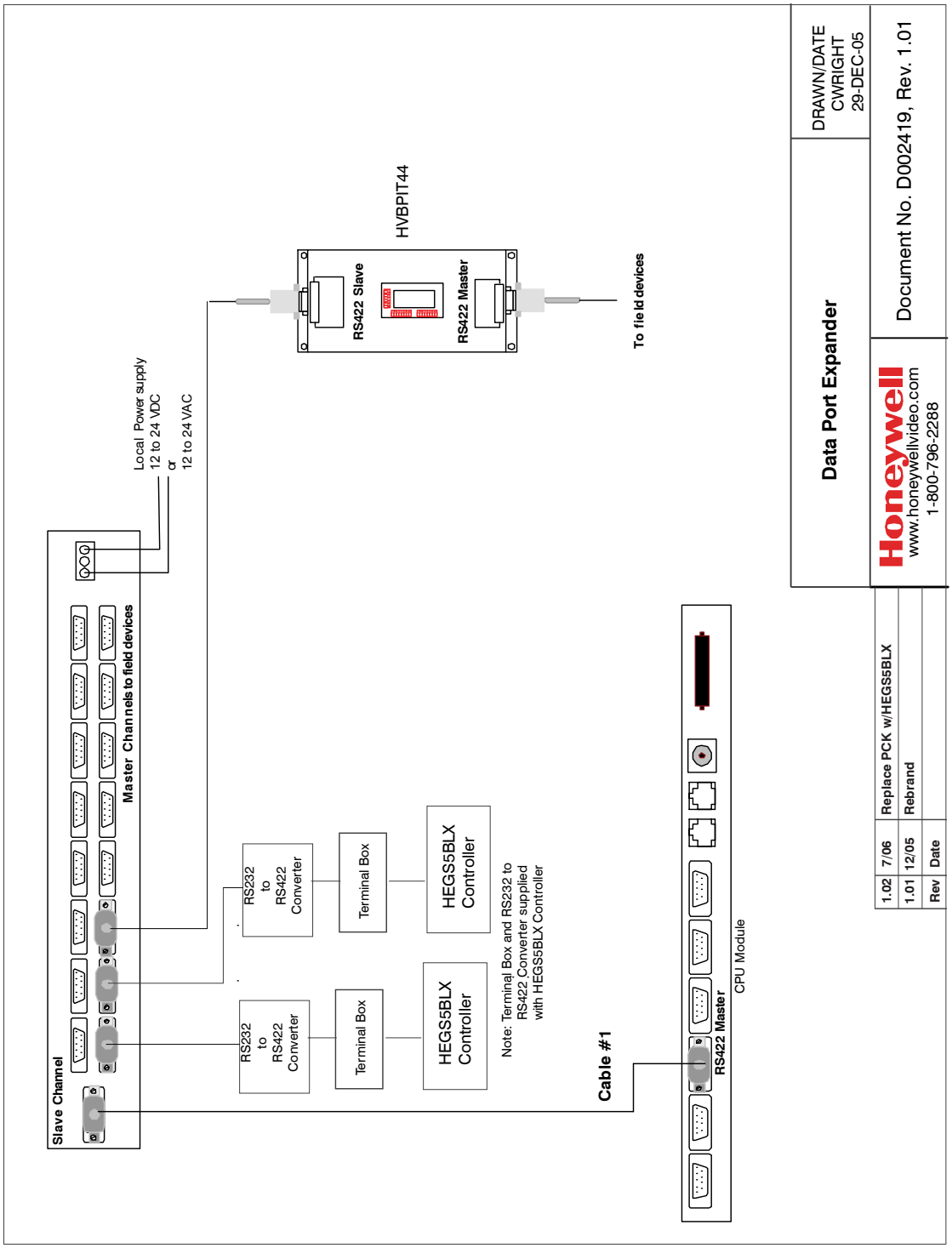
Document No. D002418, Rev. 1.02
1.02 7/06 Replace PCK w/HEGS5BLX
1.01 12/05 Rebrand
Rev Date


Slave Channel
Master Channels to field devices
Local Power supply
12 to 24 VDC
or
12 to 24 VAC
HVBPIT44
RS422 Slave
RS422 Master
To field devices
RS232 to RS422 Converter
Terminal Box
HEGS5BLX Controller
RS232 to RS422 Converter
Terminal Box
HEGS5BLX Controller
Note: Terminal Box and RS232 to RS422 Converter supplied with HEGS5BLX Controller
Cable #1
RS422 Master
CPU Module
Data Port Expander
DRAWN/DATE
CWRIGHT
29-DEC-05
Honeywell
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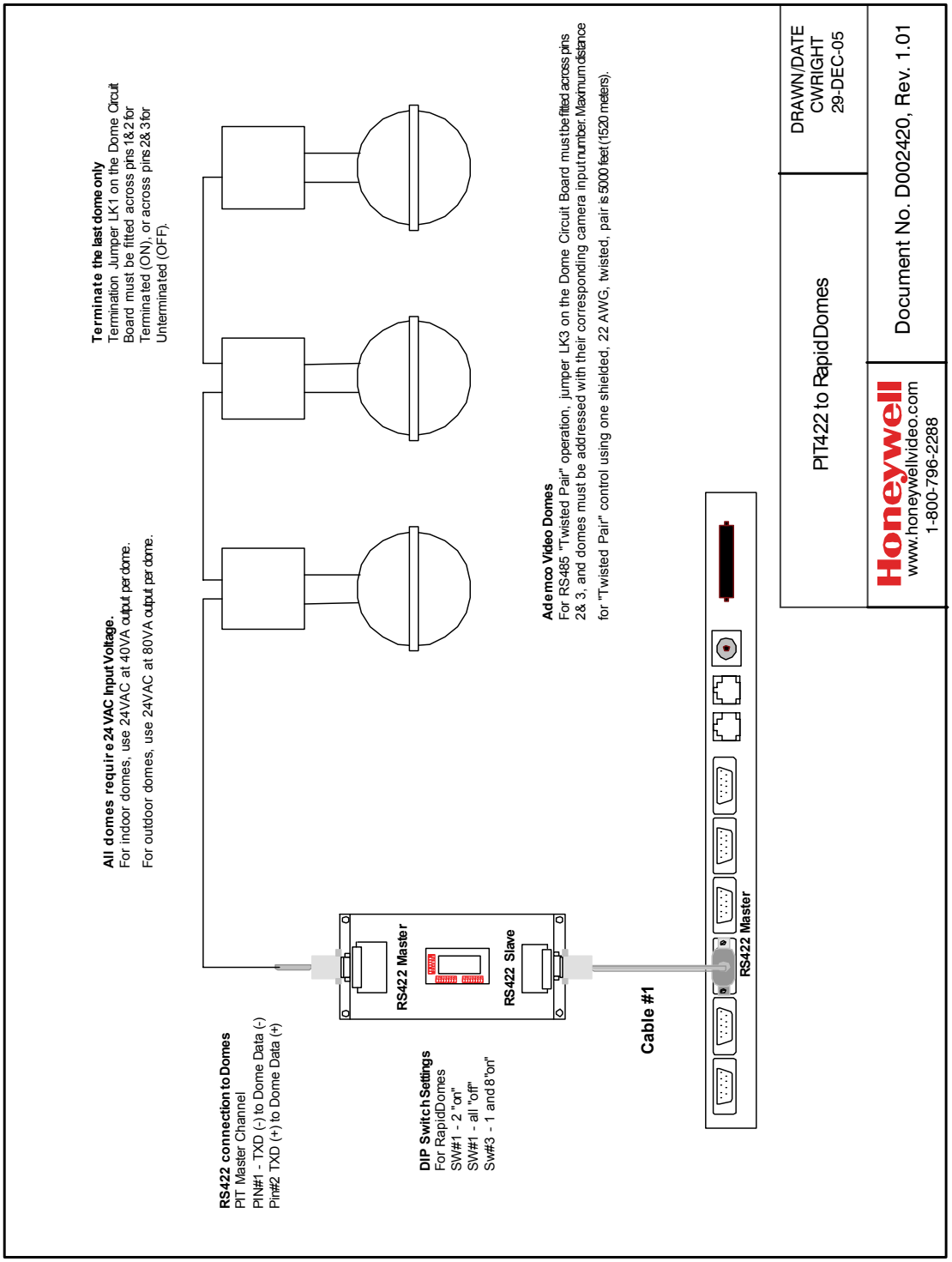
1-800-796-2288
Document No. D002419, Rev. 1.01
Rev
Date
1.02
7/06
Replace PCK w/HEGS5BLX
1.01
12/05
Rebrand


Terminate the last dome only
Termination Jumper LK1 on the Dome Circuit Board must be fitted across pins 1& 2 for Terminated (ON), or across pins 2& 3 for Unterminated (OFF).
All domes require 24 VAC Input Voltage.
For indoor domes, use 24VAC at 40VA output per dome.
For outdoor domes, use 24VAC at 80VA output per dome.
Ademco Video Domes
For RS485 "Twisted Pair" operation, jumper LK3 on the Dome Circuit Board must be fitted across pins 2& 3, and domes must be addressed with their corresponding camera input number. Maximum distance for "Twisted Pair" control using one shielded, 22 AWG, twisted, pair is 5000 feet (1520 meters).
RS422 connection to Domes
PIT Master Channel
PIN#1 - TXD (-) to Dome Data (-)
Pin#2 TXD (+) to Dome Data (+)
RS422 Master
RS422 Slave
DIP Switch Settings
For RapidDomes
SW#1 - 2 "on"
SW#1 - all "off"
Sw#3 - 1 and 8 "on"
Cable #1
RS422 Master
PIT422 to RapidDomes
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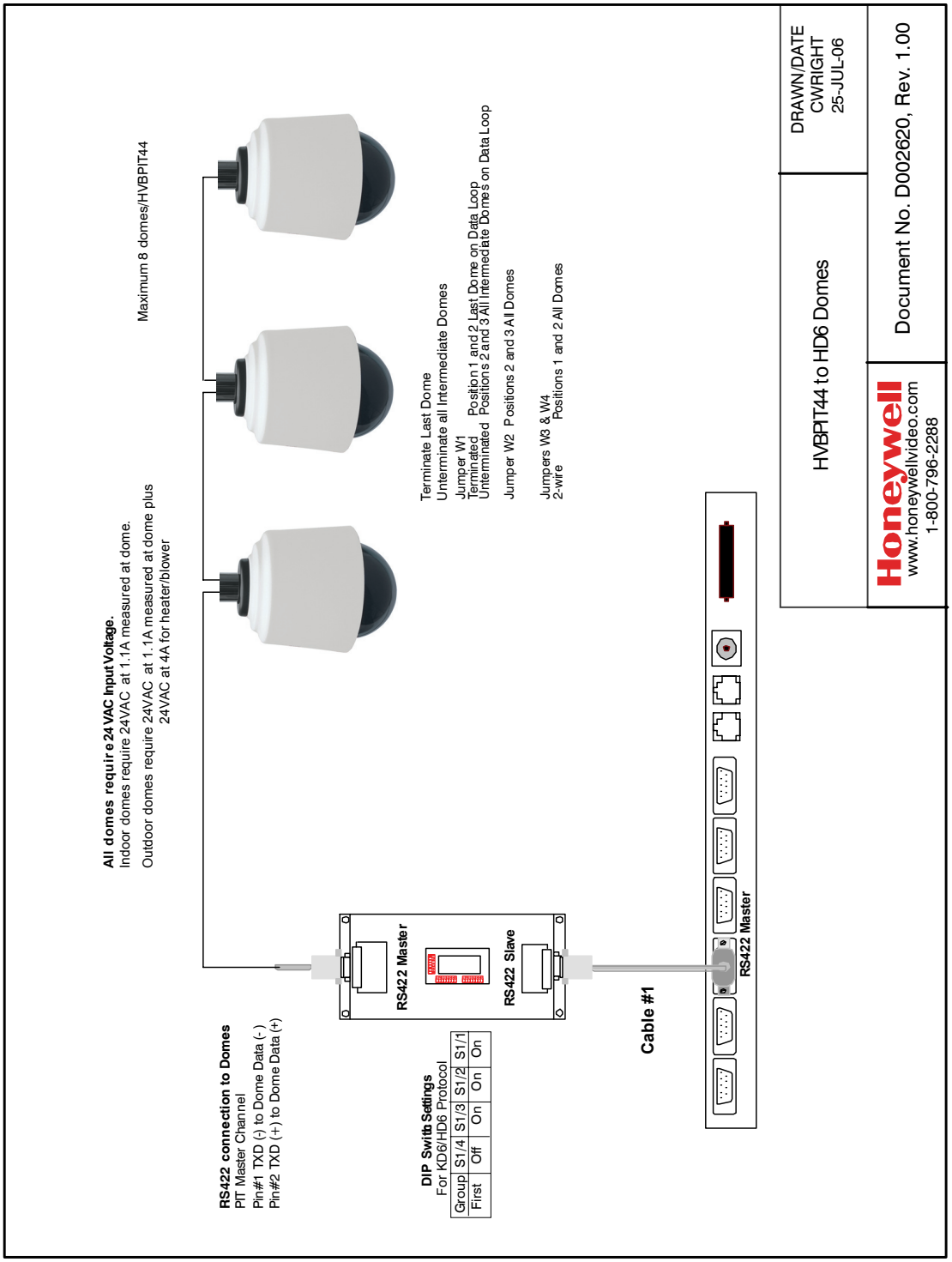
Document No. D002420, Rev. 1.01
DRAWN/DATE
CWRIGHT
29-DEC-05


All domes require 24 VAC Input Voltage.
Indoor domes require 24VAC at 1.1A measured at dome.
Outdoor domes require 24VAC at 1.1A measured at dome plus 24VAC at 4A for heater/blower
Maximum 8 domes/HVBPIT44
Terminate Last Dome
Unterminate all Intermediate Domes
Jumper W1
Terminated Position 1 and 2 Last Dome on Data Loop
Unterminated Positions 2 and 3 All Intermediate Domes on Data Loop
Jumper W2 Positions 2 and 3 All Domes
Jumpers W3 & W4
2-wire Positions 1 and 2 All Domes
RS422 connection to Domes
PIT Master Channel
Pin#1 TXD (-) to Dome Data (-)
Pin#2 TXD (+) to Dome Data (+)
RS422 Master
RS422 Slave
DIP Switch Settings
For KD6/HD6 Protocol
Group S1/4 S1/3 S1/2 S1/1
First Off On On On
Cable #1
RS422 Master
HVBPIT44 to HD6 Domes
DRAWN/DATE
CWRIGHT
25-JUL-06
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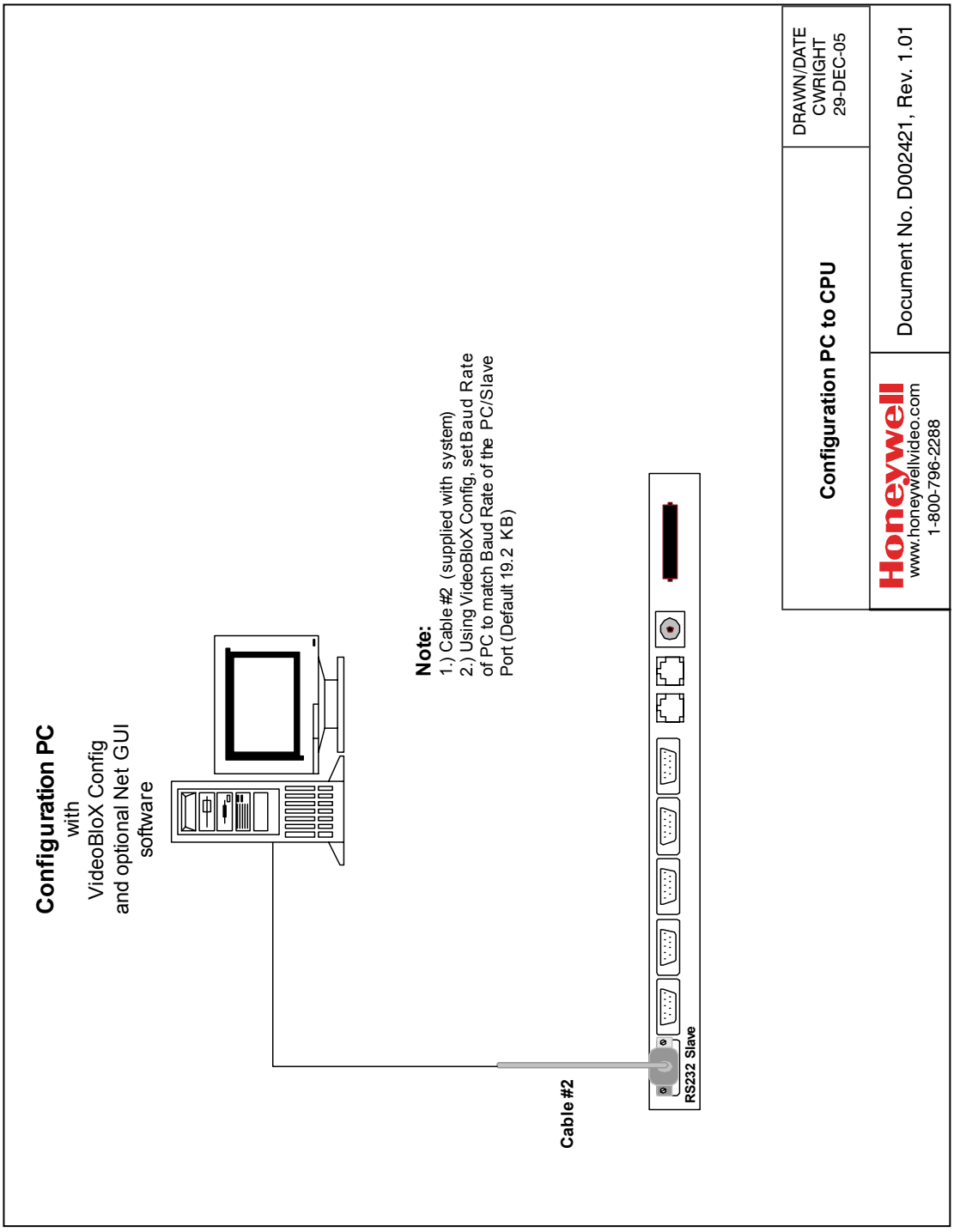
1-800-796-2288
Document No. D002620, Rev. 1.00


Configuration PC
with
VideoBloX Config
and optional Net GUI
software
Note:
1.) Cable #2 (supplied with system)
2.) Using VideoBloX Config, set Baud Rate of PC to match Baud Rate of the PC/Slave Port (Default 19.2 KB)
Cable #2
RS232 Slave
Configuration PC to CPU
DRAWN/DATE
CWRIGHT
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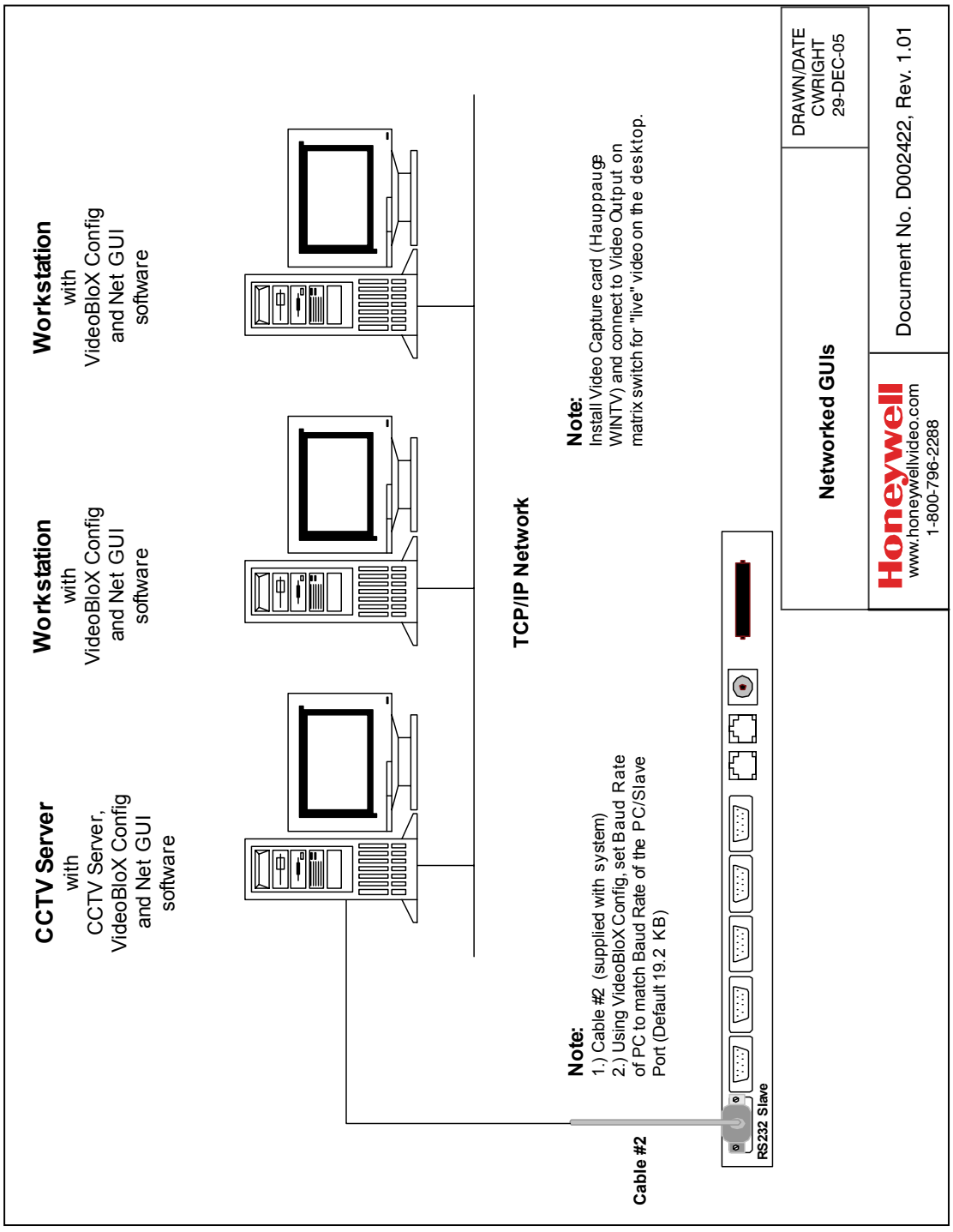
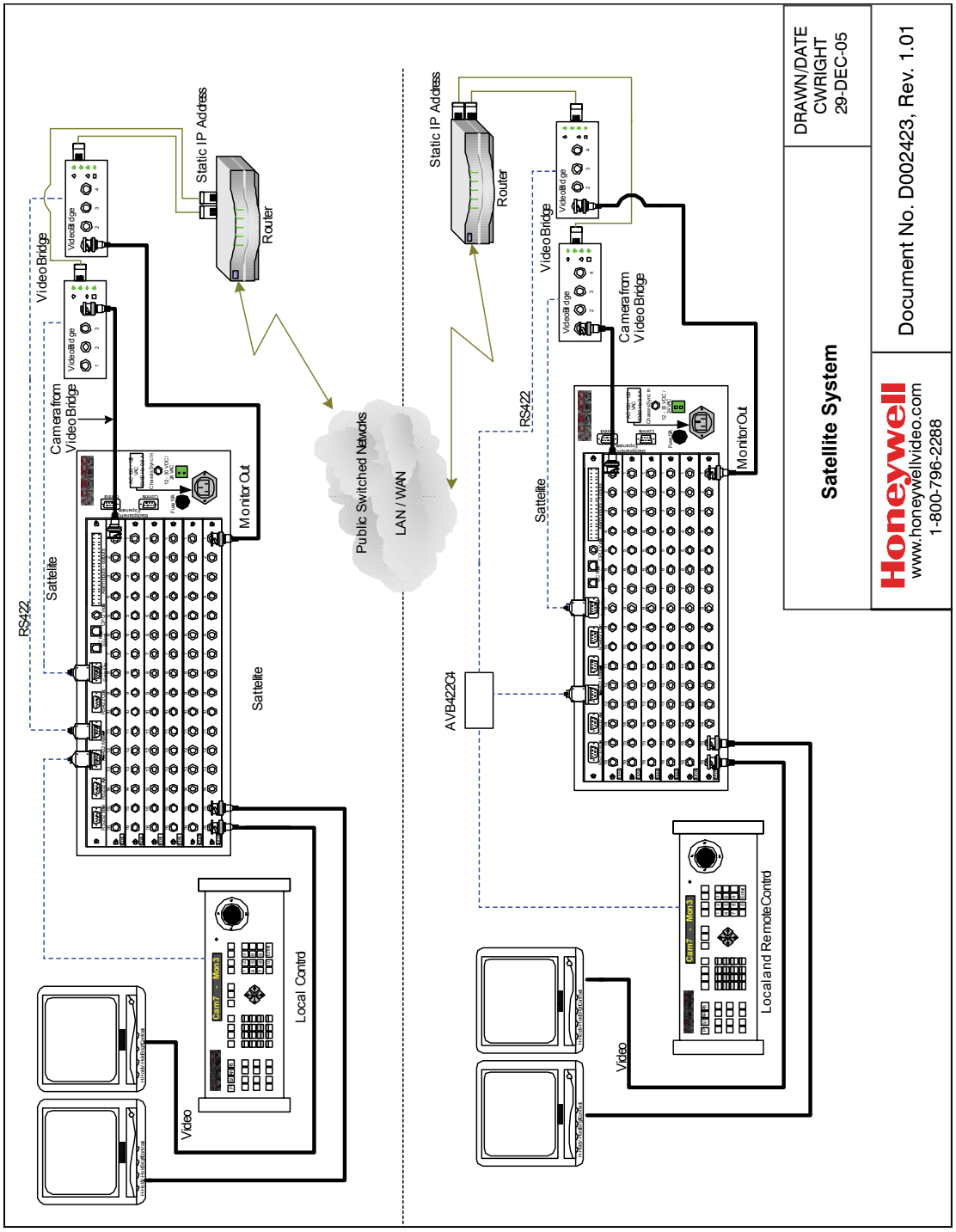
Document No. D002421, Rev. 1.01


CCTV Server
with
CCTV Server,
VideoBloX Config
and Net GUI
software
Workstation
with
VideoBloX Config
and Net GUI
software
Workstation
with
VideoBloX Config
and Net GUI
software
TCP/IP Network
Note:
Install Video Capture card (Hauppauge
WINTV) and connect to Video Output on
matrix switch for "live" video on the desktop.
Note:
1.) Cable #2 (supplied with system)
2.) Using VideoBloX Config, set Baud Rate
of PC to match Baud Rate of the PC/Slave
Port (Default 19.2 KB)
Cable #2
RS232 Slave
Networked GUIs
DRAWN/DATE
CWRIGHT
29-DEC-05
Honeywell
www.honeywellvideo.com
1-800-796-2288
Document No. D002422, Rev. 1.01


Satellite System
Honeywell
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Document No. D002423, Rev. 1.01
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CWRIGHT
29-DEC-05
Static IP Address
Router
Public Switched Networks
LAN / WAN
VideoBridge
Camera from VideoBridge
RS422
Satellite
MonitorOut
AVB422C4
Local and RemoteContrd
Video

Notes:

C

CONNECTING AHDR/HRHD DVRs

INTRODUCTION

This appendix is a step-by-step guide to setting up the AHDR/HRHD Series DVRs and controlling them with a VideoBloX system controller. An HVBPIT44 protocol translator is required for this control. Please refer to the individual component installation manuals for specific information on each product.

HVBPIT44 SETUP

DIP Switch Settings

Set the PIT to DEVICE mode.

1. Set S1 DIP switches 1,2,3,4, on: set S1 DIP switches 5,6,7,8 off
2. Set S2 all DIP switches off.
3. Set S3 DIP switches 2,3,4,6,8 on; set S3 DIP switches 1,5,7 off

This sets the PIT's Slave port to 19,2KB (ensure this matches your CPU RS422 port) and the PIT's Master port to 9600KB.

Data connections

1. Using a 9-way pin-to-pin cable, connect the PIT slave port to the Master RS422 port on the VideoBloX CPU. Note: the PIT derives its power from the CPU when a 9-way pin-to-pin cable is used.
2. Connect the PIT master port to the AHDR/HRHD rear panel RS485 connector.

Table C -1 Data Connections

PIT Master Port	AHDR/HRHD RS485
Pin 1 TX-	RX-
Pin 2, TX+	RX+

When the PIT is powered up, the 2 LEDs will remain lit solid.

VIDEOBLOX SETUP

Video Connections

1. Connect a camera or monitor output to the Video IN of the AHDR/HRHD.
2. Connect the Video OUT (not loop out) of the AHDR/HRHD to an input on the VideoBloX. (Remember the input, you will need the number later)

Configuration

Copy the device files AHDR.db and AHDR.mb to the following folder on the hard drive where the VideoBloX configuration software is installed.

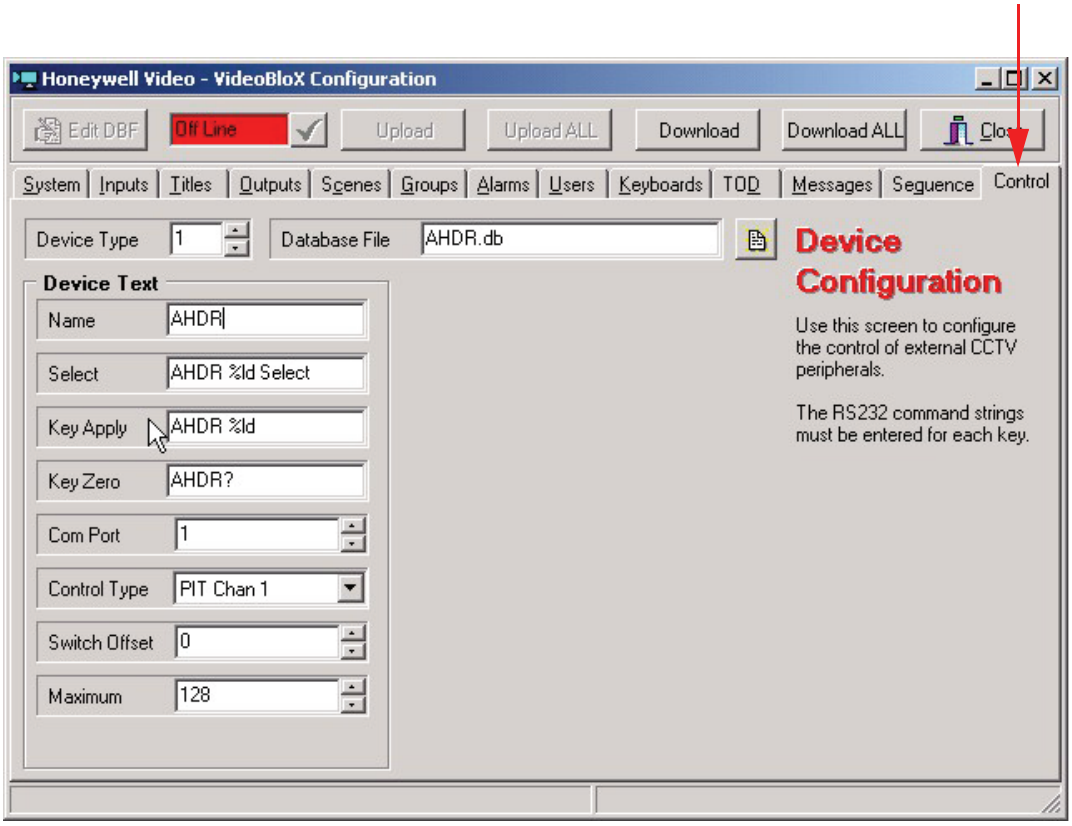
C:\Program Files\Honeywell\VBloXCFG\DBF

3. Start the VideoBloX Configuration program.

   Start > Programs > VBloXCFG > Vbloxcfg

4. Click on 

5. Click on the CONTROL tab. Set the parameters as shown in the screen shot below.



The DATABASE FILE is selected by clicking the notepad button beside the window and selecting the appropriate AHDR.db file from the list.

The SWITCH OFFSET number will be the camera input your AHDR/HRHD is connected to subtract 1. For example, if you connected the output of the AHDR/HRHD to input 33 on the VideoBloX, the SWITCH OFFSET will be 32. 32+1 is the camera input that will be switched to the monitor when you call up the AHDR/HRHD from the system controller.

6. After the parameters have been entered as shown above, click the Download button.
7. Choose the Titles tab and disable DATE and TITLE from the camera input you have chosen for the AHDR/HRHD input, click the Download button.
8. You may test the programming parameters by pressing the VCR button on the system controller.
   a. If the DEVICE TYPE was set as 1 in the control window then pressing it once will bring up AHDR on the controller display.
   b. If the DEVICE TYPE was set as 2 in the control window then pressing it twice will bring up AHDR on the controller display and so on.
9. Press 1, then ENTER; AHDR 1 Select will be displayed.
10. Press PLAY and the following will appear on the display. DVR 1:Play/Pause.
11. While pressing the key several times monitor the LEDs on the PIT and each should flicker on each key-press. This will indicate that VideoBloX is communicating with the PIT and transferring the data to the Master port.

CONFIGURING THE AHDR1E

1. At the system controller, call up the AHDR video input by using the CAM selection.
2. Press MENU and enter the password, (left, right, up, down, enter is default).
3. Select REMOTE CONTROL from the DEVICE menu.
4. Set the REMOTE CONTROL to ON.
5. Set the UNIT ID to 1
6. Set communications to; 9600,8,1,none.
7. Select OK and exit programming.

Other parameters for operating the AHDR1E/HRHD series DVRs may be found in the product manual.

The AHDR1E/HRHD will now be ready to control.

TESTING THE SYSTEM

1. Press the VCR or DVR button on the system controller until AHDR is displayed.
2. Press 1 then ENTER and the monitor will switch to the view on the AHDR.
3. If the Time and Date on the AHDR is on, you will see the Time Date generated for the AHDR.
4. In DEVICE MODE the system controller keys are mapped to the print with the white background.

   For example:

   The RECALL key is now the PLAY/PAUSE key

   The STORE key is now the STOP key

   Extra keys not labeled on the standard system controller have been added for the AHDR Database.

   These keys are mapped as follows.

   AUX1 = SEARCH

   AUX2 = MENU

   AUX3 = ENTER

   The arrow keys operate the arrow keys as on the AHDR.

   The PAUSE key has no function. Pause is obtained by pressing PLAY while in Play mode.

   To stop recording when the AHDR is in Simplex mode, press RECORD.

   Multiple presses of the REW or FWD will activate different rewind/fast forward speeds.

   In this mode you will now be able to control all the functions of the AHDR through the system controller. Search functions and access to the Menu are all available.

D

CONNECTING TO MAXPRO-Net SERVER

INTRODUCTION

This appendix provides installation diagrams and DIP Switch settings for controlling a VideoBloX system with Redundant MAXPRO-Net Servers and a MAXPRO-Net Server without Redundancy.

Required hardware:

- PC running MAXPRO-Net software
- VideoBloX Chassis (CPU module is not required)
- VideoBloX HVBMATPIT Matrix Protocol Translator

CONNECTIONS

Refer to Figures D-1 and D-2.

DIP Switch Settings

VideoBloX Chassis Power Supply Module

Set the VideoBloX Chassis as a slave chassis.

Table D-1 VideoBloX Chassis DIP Switch S1 Settings

Switch	Setting
1	On
2	Off
3	Off
4	On

HVBMATPIT

Set the HVBMATPIT DIP Switches S1 - S3 as shown in Table D-2.

Table D-2 HVBMATPIT DIP Switch S1 - S3 Settings

S1	Setting	S2	Setting	S3	Setting
1	On	1	Off	1	Off
2	Off	2	Off	2	Off
3	Off	3	Off	3	On
4	On	4	Off	4	Off
5	Off	5	Off	5	On
6	Off	6	Off	6	Off
7	Off	7	Off	7	Off
8	Off	8	Off	8	On

LED OPERATION

After completing installation;

1. Both LEDs on the HVBMATPIT should be lit solid.
2. The TX, RX and RTS data LEDs on the VideoBloX power supply module should be flashing.
3. The Video Input Card LEDs should be flashing.
4. Upon receipt of a valid command from the MAXPRO-Net PC, both yellow and green LEDs on the PIT should flicker.

Figure D-1 Connecting Redundant MAXPRO-Net Servers to VideoBloX Matrix Switcher

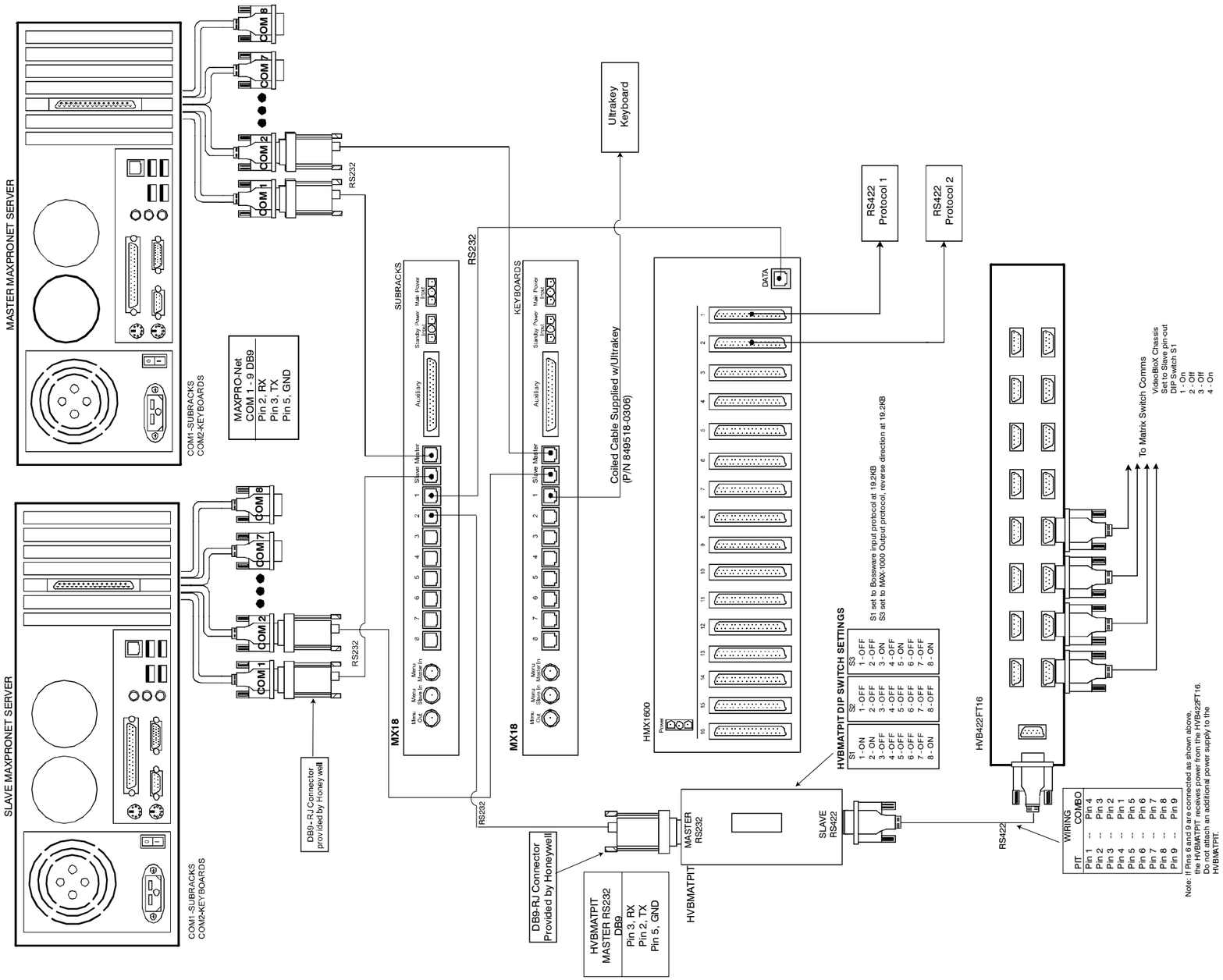
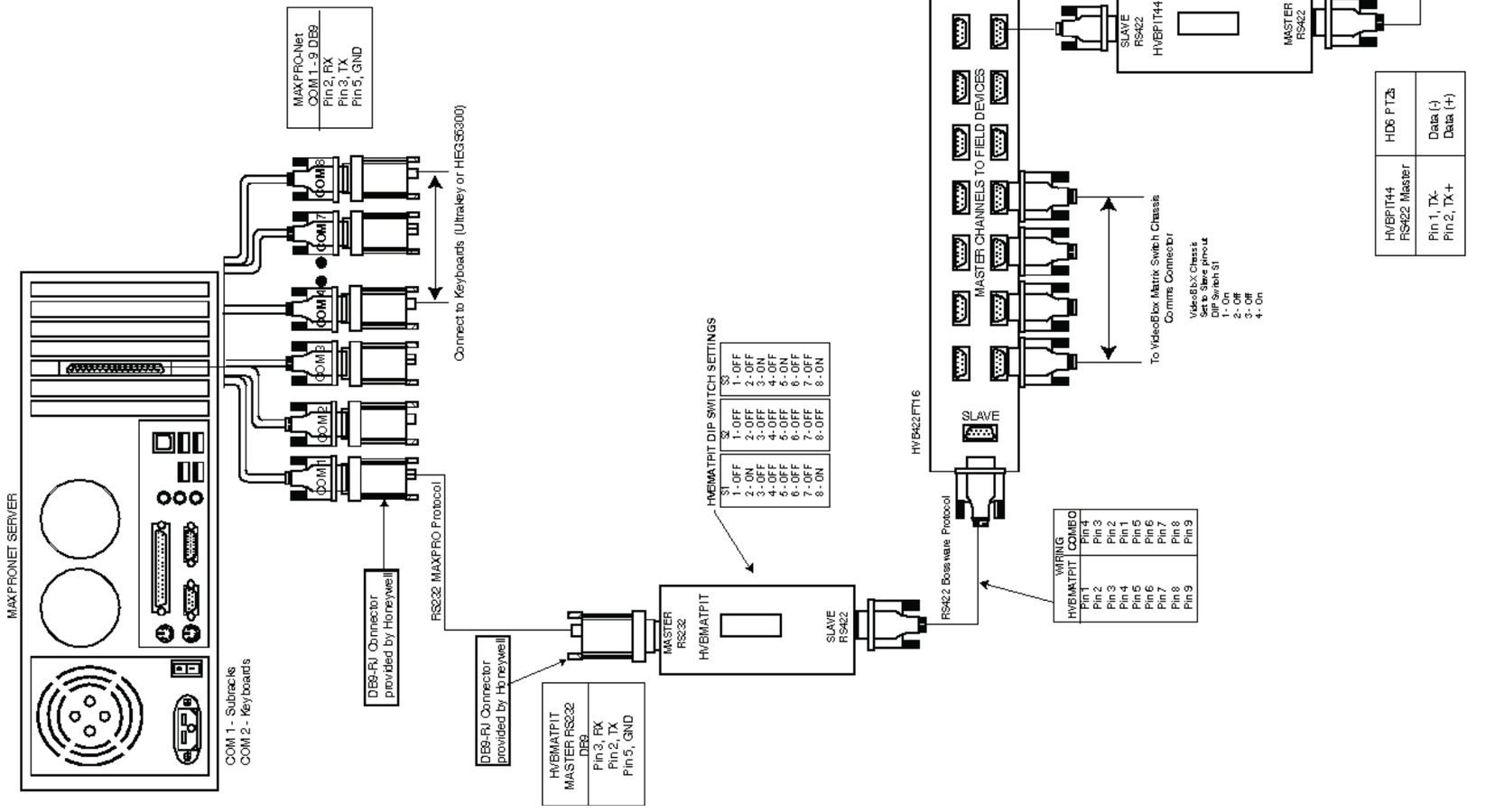


Figure D-2 Connecting a Single MAXPRO-Net Server to VideoBloX Matrix Switcher



E

NETWORKING TWO VIDEOBLOX MATRICES

PURPOSE

This appendix provides step-by-step instructions for connecting two VideoBloX matrices to allow the operator of Site 2 to view cameras from Site 1.

RECOMMENDATIONS

It is highly recommended, if possible, to set the two systems up side-by-side to configure and program. As the communications between networked systems typically span a wide distance, troubleshooting is considerable easier and less time consuming with all the components in one location. Once operational, the only variable introduced when the systems are in place are the communication connections.

ADDRESSING THE CHASSIS

Each chassis must have a unique address.

Set Site 1 to Address 1 and Site 2 to Address 2 as follows:

Note Use S1, positions 1 to 4, for combo CPU and S1, positions 1 to 6, for the standard CPU module.

Table E-1 Chassis Addresses

Address 1		Address 2	
S1.1	On	S1.1	Off
S1.2	Off	S1.2	On
S1.3	Off	S1.3	Off
S1.4	Off	S1.4	Off
S1.5	Off	S1.5	Off
S1.6	Off	S1.6	Off

CONNECTIONS

1. Connect a data line between the SAT RS422 ports on the standard CPU modules or between the AUX RS232 ports on combo CPU. modules in each chassis.

Table E-2 Standard CPU Connections SAT RS422 ports

Pin/Function	Site	Pin/Function	Site
Pin 1/TX-	Site 1	Pin 4/RX-	Site 2
Pin 2/TX+	Site 1	Pin 3/RX+	Site 2
Pin 1/TX-	Site 2	Pin 4/RX-	Site 1
Pin 2/TX+	Site 1	Pin 3/RX+	Site 2

Table E-3 Combo CPU Connections AUX RS232 Ports

Site 1	Site 2
Pin 2 TXD	Pin 3 RXD
Pin 3 RXD	Pin 2 TXD
Pin 5 GND	Pin 5 GND

2. Connect a Video Output from Site 1 to an Input on Site 2. The number of Interlinks will determine the maximum number of cameras that can be viewed at any one time from Site 2. For this example connect Site 1 output 8 to Site 2 Input 64.

DIP SWITCH SETTINGS

Standard CPU

Ensure the SAT baud rate on both chassis (site 1 and site 2) are the same. The default is 9600kbs.

Set S3/1 and S3/2 off.

Set S4/1 on.

COMBO CPU

Ensure the AUX/SAT baud rate on both chassis (site 1 and site 2) are the same. The default is 9600kbs.

Set S1/7 and S1/8 off.

Set S2/4 on (sets AUX/SAT port to Satellite mode).

Set S2/3 on.

PROGRAMMING WITH Vbloxcfg APPLICATION

1. Backup each database folder (DBF) in the configuration software under a new name so that the two site databases do not get confused. This is done manually by renaming the DBF folder in C:\Program Files\Honeywell\VBloXCFG using Windows renaming conventions.

Caution Be sure to use the Site 1 database folder (DBF) when connected to Site 1 and Site 2 database (DBF) when connected to Site 2.

2. Site 1
   Set up Site 1 as a normal system with all PTZs operating and camera switching operational. For this example, Site 1 has 32 cameras.
3. Site 2
   Set up Site 2 local cameras (if applicable) as usual and assign them a group of input numbers. For this example, cameras 33 to 48.
   a. Set up the Site 1 cameras on Site 2 CPU as follows:
      - Input 1 will be the first camera from Site 1.
      - Set the Input Detail Satellite to address 1.
      - Set the Physical I/P to the Input number on Site 1 matrix, and, for this example, 1.
      - Repeat this procedure for all 32 Inputs

Caution If the camera on Site 1 is a PTZ, then set the Type to PTZ. The address is not used, but must not be 0.

- Download all Inputs.
- Click on the Interconnects button and ensure the table is for Address 1.
- Assign how Site 1 is connected to Site 2. For this example Local Input is 64 and Remote Output is 8 for 1 trunk.
- Download the table
- The titles for the Site 1 cameras can be disabled as the title will be generated from Site 1.

TESTING

From Site 2:

1. Select a Site 1 camera. For this example, select camera 1 and ensure the SAT LED (Standard CPU) or the AUX LED (Combo CPU) flashes when the Enter button is pressed on the HEGS5BLX Controller.
2. Simultaneously the corresponding LED on Site 1 CPU will flash.
3. Ensure the correct camera comes up.

TROUBLESHOOTING

Table E-4 Troubleshooting Networked Chassis

Problem	Solution
Site 2 LED does not flash when a Site 1 camera is selected	• The system does not know this is a satellite camera. Ensure the camera input detail is set to ADD1 in Satellite for the camera and DOWNLOAD. • No Interconnects have been set. Check the Interconnect settings and DOWNLOAD
Site 2 LED flashes but Site 1 LED does not	• Check communication cable pin outs, baud rates and chassis address. • Verify page 17 of the Diagnostic video from the CPU shows a real time assignment of the cameras to the Links.

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